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THE HISTOGENESIS OF MULTIPLE BASOCELLULAR CARCINOMA*

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A discussion of the autogenetic theories of the etiology of cancer invariably leads one ultimately to the hypotheses originally formulated by Thiersch[1] and by Cohnheim.[2] Hansemann,[3] Lubarsch,[4] Krompecher,[5] Borrmann[6] and a number of others follow Thiersch's lead, and believe that a disturbance of the normal restraining influence of one tissue on another is in a large measure responsible for the lawless proliferation of the cancer cell, while Ribbert[7] is probably the foremost present advocate of the embryonal inclusion theory.

Janeway[8] has recently made an interesting contribution to the subject. His conclusions may be briefly summarized as follows: The essential change applicable to all cases in the transition of somatic cells into cancer cells is primarily of the nature of a degeneration, which, in one class of cases, is dependent on the existence of a previously isolated group of cells, in another class on associated lesions in the connective tissue stroma, particularly a subepithelial capillary congestion which is of such a nature as to suggest a diminution of tissue tension and the setting free of regenerative forces in the adjacent epithelial elements, and in still a third class on metaplastic activities for which the epithelial cells alone are responsible. In one instance Janeway found a prickle-cell carcinoma which he believed had resulted from a basal-cell metastasis.

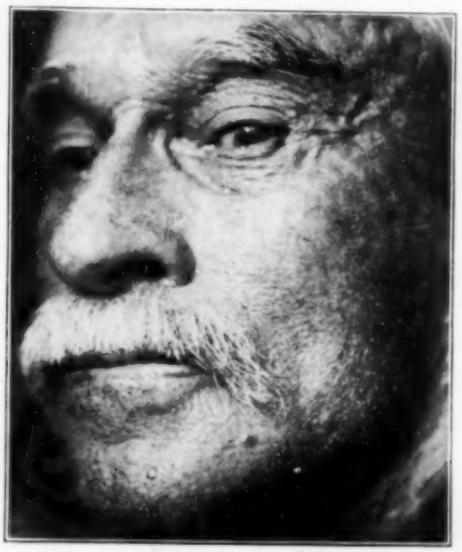

Fig. 1.—Patient 2. Note distribution of lesions on nose and chin.

Loeb and Sweek[9] have investigated the histopathology of a number of lesions excised from a case of multiple carcinoma of the skin in a man, aged 33. The patient had received a number of Roentgen-ray treatments for the lesion which first appeared. The writers endeavored to ascertain: 1. Whether or not the tumors were multiple primary lesions or skin metastases which had originated from one primary lesion. 2. If the tumors were multiple primary lesions, did they spring directly from the basal layer of the epidermis or other normal cutaneous structure, or from cell nests in the corium, the epidermal involvement being purely secondary? 3. In case of a direct downgrowth of the surface epithelium, did any perceptible change, such as round-cell infiltration, connective-tissue cell increase, as claimed by Ribbert, or vascular dilatation or other alteration, as suggested by Spude[10] and by Janeway, precede the epithelial proliferation?

They conclude that the formation of multiple carcinoma of the skin depends on a primary increase in activity of certain parts of the epidermis, and that this proliferative tendency is independent of attractive influences of blood-vessels and of changes in the corium. They consider it hypothetically possible that the pathologic changes found in the skin, especially in the derma, may entail an abnormal metabolism of the skin with resulting production of substances which exert a stimulating effect on the proliferative energy of the epithelium at various places, thus rendering certain areas in the epidermis exceedingly sensitive to the action of even slight external stimuli, such as mechanical pressure, sunlight, the Roentgen rays and alterations in temperature. The inability of the affected epithelium to undergo the normal metamorphosis of surface epithelium into keratohyalin and keratin, they believe due mainly to its relatively slight infiltrative power and proliferative energy.

During the past eighteen months I have had opportunity to study five typical cases of multiple carcinoma basocellulare.

CASE 1.—Mrs. L. T., housewife, aged 23, was referred by Dr. Walter S. Sutton of this city. The lesions, which were

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1. Thiersch: Der Epithelkrebs, namentlich der äusseren Haut, Leipsic, 1865, cited by Ziegler, General Pathology, edit. 11, Wartuin's translation, William Wood and Co., New York, 1908, p. 467.
2. Cohnheim: Vorlesungen über allgemeine Pathologie, Berlin, Hirschwald, 1882, i, cited by Janeway (see Note 8).
3. Hansemann: Virchows Arch. f. path. Anat., 1890, cxix, 299; 1891, cxxiii, 356, and 1893, cxxxiii, 147.
4. Lubarsch: Arbeit. aus dem path. Institut in Posen, Virchow gewidmet, 1901, p. 205.
5. Krompecher: Der Basalzellenkrebs, Jena, 1903, p. 241 et seq.; Beitr. z. path. Anat. u. z. allg. Path., Jena, 1905, xxxvii, p. 131.
6. Borrmann: Ztschr. f. Krebsforsch., 1904, ii, 1.
7. Ribbert: Beiträge zur Entstehung der Geschwülste, zweite Ergänzung, Bonn, F. Cohen, 1907, p. 17.
8. Janeway: Ztschr. f. Krebsforsch., 1910, viii, 403.
9. Loeb and Sweek: Jour. Med. Research, 1913, O. S., xxviii, 235.
10. Spude: Ztschr. f. Krebsforsch. 1908, vi, 363.

linseed- to wheat-grain-sized, round or flat-topped, flesh-colored tumors, numbered more than fifty, and had been present for from two to eight years. Only one had ulcerated.[11]

CASE 2.—J. R. V., widower, retired contractor, aged 67, was referred by Dr. N. E. Lake of this city. The family cutaneous history was negative. The primary growth had appeared on the left side of the nose about ten years prior to the date of examination, and was a typical epithelioma of the rodent ulcer type. Early in 1913 this lesion was destroyed by means of the Roentgen rays and carbon dioxid snow. In July, 1913,

Fig. 2.—Patient 3. Character and distribution of lesions is well shown.

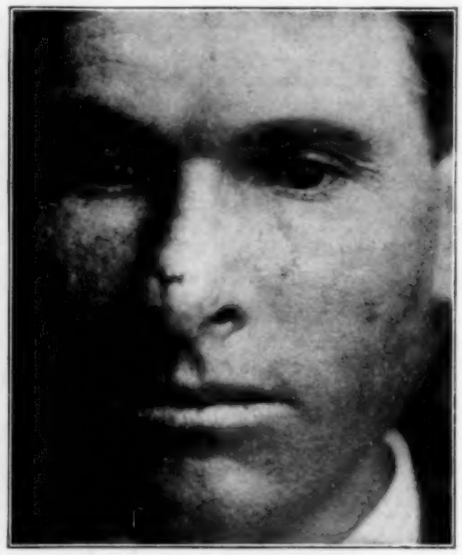

Fig. 3.—Patient 4. Distribution and character of lesions on nose, cheek and forehead may be noted.

the patient reported for further treatment. On examination it was found that three new lesions had developed, one on the left ala, and two on the left side of the chin (Fig. 1). The site of the original lesion was a smooth scar. The three new growths were firm, pinkish, oval nodules, averaging 0.5 cm. in diameter. They gave rise to no subjective symptoms.

CASE 3.—A. F., farmer, married, aged 29, was examined and the biopsies performed through the courtesy of Dr. Frank J. Hall, of this city. The disease had first appeared on the tip of the nose, eleven years before, the initial lesion being a small, pale papule which gradually increased in size during the next two years. At the end of that time it broke down in the center, and a sluggish, stellate ulcer, having a granulating base and a slightly elevated, oval, waxy border, resulted. Shortly afterward a second tumor appeared, and then a third, both near the outer canthus of the left eye. These followed the same clinical course as the first. During the next year, two more lesions developed, both being located on the chin. Following these no new tumors appeared. The ulcers gradually increased in size, but always remained superficial (Fig. 2). There was no lymph-node involvement.

Fig. 4.—Microscopic section of specimen from Case 3. Note dense, almost acellular character of derma. Looped-off masses of connective tissue in the center of cancerous growths have degenerated, giving rise to cysts.

CASE 4.—R. A., married, farmer, aged 32, was referred by Dr. John Kennedy of Blue Mound, Kan. The patient's maternal grandmother died of cancer of the face, and his mother had a rough, harsh skin; otherwise the cutaneous history of the family was negative. The disease had begun on the tip of the nose, two years before, as a small, hard, shiny, painless nodule. Medical advice was not sought, and the growth gradually increased in size, finally breaking down to form an irregularly outlined, shallow, roll-edged ulcer. Fourteen months later a second lesion developed on the flush area of the left cheek. The patient was slender but muscular. The skin on parts other than the face and hands was normal. In these regions the integument was rough and scaly, with a tendency to the formation of keratoses. None of these lesions had become malignant, however, the only cancerous growths found being three small, pearly nodules on the face, and the ulcer on the nose. The ulcer had healed in the center, but there were signs of active proliferation at the margin. The lesion beneath the left eye consisted of two partially coalescent, wheat-grain-sized tumors. In the center of the forehead was a third tumor, and near the right nasolabial fold a fourth (Fig. 3).

CASE 5.—R. B., widower, capitalist, aged 73, was referred by Dr. W. H. Gibbons of Clinton, Mo., and Dr. J. Archie Robertson of this city. The cutaneous history of the family was negative. The patient had spent much time out of doors, and the integument covering his face and hands was of the type described by Unna[12] as "sailor's skin." The lesion from which relief was sought had existed for about three years, and was located on the right side of the nose. Clinically it presented all of the characteristics of a rodent ulcer. Just in front of the right ear was a second tumor, a small prickle-cell carcinoma which had developed on the base of a long-standing seborrheic keratosis. Early in April, 1913, each of

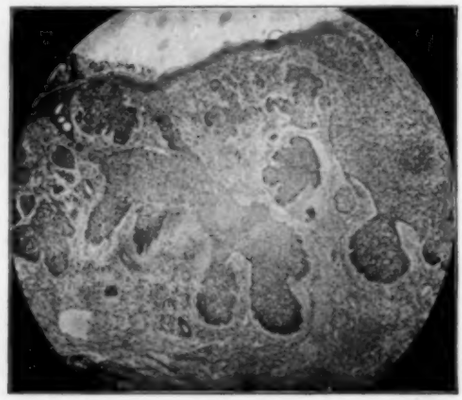

Fig. 5.—Microscopic section of specimen from Case 2. Note loosely interwoven character of connective-tissue bundles, and contour of cancerous masses.

11. The history of this patient has previously been published (Sutton: Am. Jour. Med. Sc., 1913, cxlv, 819) in connection with that of her mother who had both acanthoma adenoides cysticum and rodent ulcer, and is included here only for comparison.

12. Unna: Histopathology of the Diseases of the Skin, Walker's translation, New York, 1896, p. 719.

these growths was given an erythema dose of Roentgen rays, and then deeply and thoroughly frozen with carbon dioxid snow. The patient spent the summer in Colorado and reported for examination early in September. At that time the lesion on the cheek had disappeared, and only a minute portion of the one on the nose remained. But at various points on the face new tumors had developed, one on the forehead, one near the base of the left ala, and one just beneath the right eye. All were of about the same size, 2 mm. in diameter and 1 mm. in height, of firm consistency, and gave rise to no subjective symptoms whatever.

For histologic study, three tumors were excised from Patient 1, two from Patient 2, two from Patient 3, two from Patient 4 and three from Patient 5. The material was fixed in formaldehyd solution, mounted in paraffin and sectioned serially at various angles to the surface.

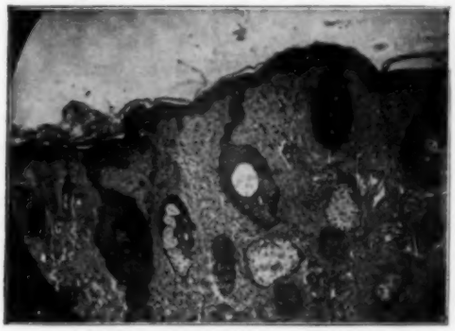

Fig. 6.—Cysts in the follicles near the margin of a lesion in Case 5. Colloid degeneration of connective tissue.

Fig. 7.—Microscopic section of specimen from Case 1, showing shape and character of epithelial tumors, with primary cyst.

Although the changes observed in the specimens from the five cases were very similar, they differed much in degree. The papillae were flattened in all, a result of long-continued pressure from below, and the unaffected neighboring epidermis was thinned and atrophied. Mitotic figures in the prickle cells were rare. Perinuclear halos were comparatively common. In specimens taken in Cases 1, 2, 4 and 5, rarefied areas in the connective tissue were frequent, but in the specimen in Case 3 the stroma was so condensed at some points as to appear almost homogeneous (Fig. 4).

The development of the cancer masses could be studied best in the early lesions from the first patient. The process apparently began in the basal layer of an otherwise normal interpapillary body. The affected elements could be readily differentiated from the normal by a slightly decreased affinity for the basic dyes. As Loeb and Sweek have suggested, the character of the downgrowth is probably governed more by the resistance of the underlying structures than by any other one factor. If the penetrative action were a result of perivascular or intravascular attraction, it is probable that we should always find long, slender, ray-like projections of transformed epithelium instead of the mushroom-, acorn- or artichoke-shaped masses that characterize tumors of this type. The course and progress of the cancerous projections are largely dependent on the comparative density of the tissues involved.

In Cases 2 and 5, both in elderly men, the loosely interwoven character of the connective-tissue bundles evidently offered but little resistance to the downward growth of the tumor; consequently we find long, sinuous strands of cancer cells extending far into the corium (Fig. 5). Probably the coalescence of these strands at various points is largely a matter of chance. If the paths of lowered resistance cross, coalescence takes place, or if the outer zone of pressure is greater than the inner, the ever-increasing size of the masses finally forces them together, a core or island of connective tissue frequently being included (Fig. 6).

In Case 1 the resistance was greater; consequently we find short, acorn-shaped epithelial tumors, occasionally with a cystic center which probably consists of disintegrated cancer cells (Fig. 7).

In Case 3 the connective tissue proved almost impenetrable, and while a few strands of cancer cells managed to creep far downward into the corium, the vast majority remained on the surface, and as keratinization never takes place in carcinomas of this type, the succulent, prolific cell-masses formed a high, slanting wall completely around the affected area. In the earlier lesions, round-cell infiltration in the vicinity of the projecting tumors was the exception rather than the rule. On the contrary, a thin layer of almost acellular connective tissue frequently separated the tumor mass from the subpapillary stroma (Fig. 8). In the older growths inflammatory changes in the corium were not so infrequent.

Judging from the contour of the sections, the cysts formed in Case 1 were of the primary type, due to the breaking down of cancer cells, while those in Case 3 were of the secondary type, the contents probably being liquefied islands of connective tissue.

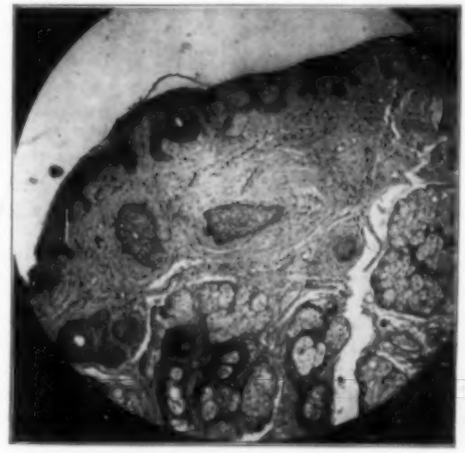

Fig. 8.—Microscopic section of specimen from Case 5. Section from the margin of the growth beneath the right eye. Note almost complete absence of cellular infiltration in vicinity of epithelial masses.

The sections taken in Cases 2 and 5 presented the best opportunity for investigating the theories of Spude and of Janeway. Of the many sections examined, in not a single instance could a connection between the development or progression of the cancerous processes

and the vascular system be traced. In fact, when one considers the character of the lesions in all of the cases here reported, the essential changes in the connective tissue were extraordinarily trivial, and invariably secondary.

CONCLUSIONS

The theories of Thiersch and of Cohnheim are not tenable in all cases of cancer.

In basocellular carcinoma the tumors spring directly from the basal layer of the rete, and are independent of proliferative changes in the corium. It is improbable that either the blood-vessels or substances within the blood-vessels exert any influence on the course or character of the lesions.

An important, if not absolutely essential, factor in the etiology of both basocellular and prickle-cell cancer is a peculiar quality of the skin, a quality which may be acquired, but is frequently congenital and occasionally inherited, and which is characterized by harshness and dryness, with more or less evidence of long-standing dry seborrhea.[13] Judging from the regions commonly involved, exposure to sunlight and to atmospheric changes also plays an important part in the preparatory degenerative process.

The long-continued action of the Roentgen rays may give rise to cutaneous changes which predispose to cancerous involvement, but this predisposition is limited to the area exposed, and would not account for an increased susceptibility of the skin on other parts of the body.

The question of a possible relationship between the growths in multiple basocellular carcinoma is an exceedingly interesting one. It may be that in some instances, when the primary lesion is untreated or insufficiently treated, as in Cases 2, 4 and 5, a shower of infectious particles is thrown off ultimately to lodge at various points in the body. The subsequent behavior of these particles is entirely dependent on their new environment, and the basal layer of a properly prepared epidermis may serve for them the same purpose that certain areas on the heart valves occasionally serve the *Streptococcus viridans*.

In treatment the main point to be considered is the early and complete eradication of the lesions. Excision should be the method of choice, failing this roentgenotherapy, with or without freezing or cauterization, probably constitutes the most efficient and satisfactory method.

13. Pusey: Principles and Practice of Dermatology, New York, 1911, p. 737.

Ignorance of Midwives.—The midwife seldom knows the laws of the state requiring her to report such cases [ophthalmia neonatorum]. She is generally unacquainted with the board of health and its functions. The one medical authority with whom she is familiar is the general practitioner of either her own nationality or her neighborhood. To him she resorts when the condition becomes such that her professional standing with the family or the neighborhood is questioned, but she usually goes too late. While statistics show that not all cases of blindness from neglect of "babies' sore eyes" are attributed to midwives, the history of too many cases in which blindness has been averted by constant and skilful treatment after the disease has developed shows a midwife originally in charge, but as having been driven by her own fear or the sentiment of her community to a specialist or hospital for treatment.—Marian A. Campbell, in *Ohio State Med. Jour.*

RADIOLOGIC SIGNS OF DUODENAL ULCER

WITH SPECIAL REFERENCE TO GASTRIC HYPERPERISTALSIS *

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While increased gastric peristalsis has been commonly listed among the radiologic signs of duodenal ulcer, it has not received the emphasis which it deserves as an independent diagnostic indication, and no serious effort has been made to estimate its value relative to other signs, and thus to show its specific importance. More often it has been casually remarked as a mere feature of hypermotility. Foreign radiographers have, in a general way, remarked its frequency, but without going into large figures or refined details. In this country attention has been almost wholly directed to other signs. My own experience with this sign has been so strongly confirmatory of its high importance that I venture to present herewith brief statistics of 198 cases of duodenal ulcer operatively confirmed, showing the percentage in which hyperperistalsis was noted.

The establishment in recent years of duodenal ulcer as an anatomopathologic entity and the frequency of its

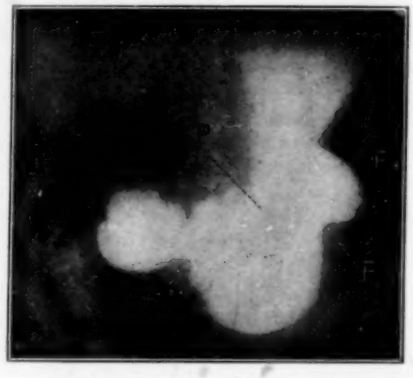

Fig. 1.—The white area is the bismuth-filled stomach. The indentations, marked *P*, are peristaltic waves, the depth of which shows the vigor of contraction. In this case, there was marked obstruction as shown by a residue of three-fourths of the bismuth meal after six hours. The extreme exaggeration of the peristalsis is due in part to this obstruction. At operation, a large irregular ulcer of the duodenum was found. Lumen of duodenum reduced to size of a lead-pencil at the point of obstruction.

incidence have led to rapidly increasing knowledge of this condition. In the past, ulcer of the duodenum has no doubt been confounded with ulcer at the pyloric end of the stomach, partly because of the assumption that any ulcer found in the vicinity of the pylorus must necessarily be gastric, and partly because of the difficulty of determining the exact site of the pylorus. In 1907, W. J. Mayo[1] called attention to the pyloric vein as a landmark corresponding accurately to the pyloric sphincter. More careful determination of the pyloric site has resulted in finding that the ratio of frequency between duodenal and gastric ulcer is far greater than has been supposed, being now variously stated as three and even four to one.

Notwithstanding the constantly growing mass of convincing statistics, many clinicians and especially a few gastro-enterologists of this country and continental Europe are on record as claiming that duodenal ulcer is

* From the Mayo Clinic, Rochester, Minn.
1. Mayo, W. J.: Ann. Surg., June, 1907, p. 811.

a lesion which rarely occurs. Their inability to recognize its frequency is probably due, as W. J. Mayo states, to the presence of the abdominal wall.

Speaking from a radiologic point of view, I might say that during the last year only have I come to realize the frequency of this condition through following cases to operation and looking into the abdominal cavity with the surgeon. I would certainly recommend this procedure to those who are skeptical, because a large number of the patients treated for "chronic dyspepsia" have duodenal ulcer.

At present the diagnosis of duodenal ulcer depends chiefly on the anamnesis. Conceding that the history is diagnostic with a relatively small percentage of exceptions, the tendency is to supplement this with physical methods, in which error due to the personal equations of the observer and patient can be more or less eliminated. Of these adjuncts the Roentgen ray is the more important.

RADIOLOGIC SIGNS

The roentgenologic indications of duodenal ulcer, which have been frequently catalogued by various observers during the past two years may be divided into major and minor signs. The major signs are:

1. Gastric hyperperistalsis.
2. A residue in the stomach (sometimes in the duodenum) after six hours, if there be obstruction from scar contraction.
3. A diverticulum of perforating ulcer.

The minor signs include:

1. Gastric hypermotility with early free opening of the pylorus and speedy clearance of the stomach.
2. Gastric hypertonus.
3. Irregularities in the outline of the cap or bulb, or of the duodenum.
4. Lagging of bismuth in the duodenum.
5. Pressure-tender point over the duodenum.
6. Spasms of the stomach such as hourglass or slowly traveling incisura.

The technic by which these signs may be elicited is varied. One of the most satisfactory is the double meal method. Our present routine is as follows:

1. Purgation with castor oil, given the evening prior to examination.
2. Two ounces of chemically pure barium sulphate in a portion of breakfast cereal given to the patient the next morning.
3. Fluoroscopic-screen examination six hours later, during which the patient is first given 2 ounces of bismuth subcarbonate in 6 ounces of water, then 2 ounces of bismuth subcarbonate in 16 ounces of potato-starch pap.
4. Plates made at once after screen examination, and subsequently at intervals if desired, in either the prone or standing position, preferably the latter.

HYPERPERISTALSIS

Gastric hyperperistalsis has long been included among the Roentgen-ray indications of duodenal ulcer, but has usually been mentioned as incident to hypermotility with early clearance of the stomach, which latter sign has been given greater prominence. While increased peristaltic action may sometimes promote an early evacuation of the stomach, there is no fixed relation between the two.

Whenever the combined screen and plate method of examination is used, peristaltic exaggeration in duodenal ulcer is readily discoverable, occurs in a large proportion of cases, and has a high diagnostic value regardless of the time of gastric clearance.

The intensity of peristaltic vigor as we have noted it in this condition, using the technic previously described, varies from a slight exaggeration of wave-depth to an almost tumultuous energy of contraction. So extreme is the latter in the obstructive cases that the stomach is nearly segmented by the opposed waves, and resembles a row of balls. The peristaltic contractions on the lesser curvature participate in the tempest. Normally traversing only a small portion of the lesser curvature and deepest at their termination, they now seem to cover a wider range and are deep throughout. This symmetry and correspondence of the contractions on both curvatures is a distinctive feature. The waves are increased not only in depth, but also to some extent in frequency, so that three or four pairs may be seen in progress at once, whereas normally, using the mediums mentioned, only one or two very superficial pairs are seen.

Fig. 2.—Deep peristaltic waves, indicated by *P; D* marks bismuth in duodenum. *Pyl.*, pylorus. One-half the bismuth meal was retained in the stomach after six hours. Operation showed obstructing ulcer of the duodenum.

Fig. 3.—Same case as in Figure 2. Roentgenogram made immediately after that shown in Figure 2. *D*, duodenum; *Pyl.*, pylorus. Note absence of peristaltic indentations. This case illustrates the intermittency of the peristalsis.

This exaggeration of gastric peristalsis does not seem to be related to hyperacidity, because it has been noted in many of the cases of ulcer with moderate or low acidity. On the other hand, cases of gastric ulcer and appendicitis (the latter especially) with high acidity, have not shown this phenomenon. Neither does it appear to be merely compensatory to obstruction from stenosis of the duodenum, since we have seen it repeatedly where obstruction did not exist in sufficient degree to produce a six-hour residue, or to be evident at operation.

It has been my observation that stenotic lesions on the gastric side of the pylorus are rarely accompanied by gastric hyperperistalsis. Even if the peristalsis be greater than normal it is not likely to be bilateral, but will show its activity chiefly on the greater curvature. Here one is more likely also to see antiperistalsis, as I have in several cases. I have never seen antiperistalsis in duodenal irritation, even with obstruction.

The exaggerated peristalsis which may be evoked by massage of the epigastrium differs from the hyperperistalsis of duodenal ulcer in the fact that the former subsides very quickly after manipulation ceases. The hyperperistalsis of duodenal ulcer requires no external stimulation to induce it. During and immediately after the ingestion of the bismuth water, peristalsis often seems rather marked, but this soon subsides. After filling the stomach with the bismuth pap, on the contrary, the institution of peristalsis is quite commonly delayed for some minutes, reaching its maximum vigor still later. The hyperperistalsis of duodenal ulcer is quite commonly of an intermittent character. It may be noted on the screen but not seen on the plate, or vice versa. Hence observation should be prolonged until this sign has had time to appear.

The degree of peristaltic vigor is apparently influenced by the character of the opaque meal. The commercial condensed milks, which contain butter fat, markedly depress peristalsis. Fermented whole milk, buttermilk and potato-starch pap are admirable mediums and do not adversely affect peristaltic action. Bismuth oxychlorid is believed to produce more vigorous action than does the subcarbonate. This is also true of barium sulphate. It has also been observed that in plates made with the patient prone the peristaltic vigor is more pronounced than in plates made of the same patient when standing. For these reasons one should have a uniform technic, so that comparisons may be on the same basis.

Fig. 4.—*Pyl.*, pylorus. *D*, duodenum. *P*, peristaltic waves. *C*, cecum. *T. C*, transverse colon. Vigorous peristalsis was more marked on the screen than on the plate. No obstruction. Operation showed semiperforating duodenal ulcer two inches below pylorus.

Exaggerated peristalsis above an irritative lesion of the digestive tube has been often observed radiologically and produced experimentally. In duodenal ulcer, duodenal irritation must exist as a constant or nearly constant factor. Why, then, is hyperperistalsis not seen constantly? Is its absence in some cases due to psychic influences such as fright or disgust for the bismuth meal? Is it sometimes delayed in appearance and thus overlooked in a brief examination? Is it because of peculiarities in the distribution of the nerve-supply? Does the situation of the ulcer play a part? All these are problems worthy of investigation.

SIX-HOUR RESIDUE

Of all the radiologic signs of lesions of the digestive tract the presence after six hours of a distinct residue from the barium or bismuth meal is perhaps the most important. The radiologist feels assured that almost without exception such a residue signifies an organic lesion, whether or not all his diagnostic deductions be confirmed. Theoretically, a residue may remain in simple atony and we have had one case (no operation) in which this was believed to be true; but of our cases with residue which came to operation every one was found to have some condition requiring surgical intervention.

A residue in the stomach from the barium or bismuth meal, six hours after its ingestion, occurs in a large proportion of cases of duodenal ulcer. This is often loosely spoken of as being due to pyloric obstruction, whereas the obstruction is actually in the duodenum and is produced by ulcer—scar contraction. Occasionally there will be found not only a six-hour residue in the stomach, but also a six-hour residue in the duodenum above the stenosis, thus enhancing its diagnostic value. A six-hour residue may, however, also be found in the stomach as a result of gastric ulcer or carcinoma, or thickening of the pyloric ring. A six-hour residue in the duodenum may result from bands of adhesions, or from the pylorospasm incident to gall-bladder disease.

DIVERTICULUM

The diverticulum of perforating duodenal ulcer is rather decisively diagnostic when found, but its rarity is shown by the fact that in the 198 cases herein reported only two showed this phenomenon, both of which were diagnosed radiologically.

HYPERMOTILITY WITH EARLY CLEARANCE OF THE STOMACH

At the screen examination, the bismuth water, immediately after being swallowed, is often seen to flow freely and spontaneously into the duodenum, sometimes visualizing the latter throughout. When the flow is not spontaneous, slight pressure on the stomach, or, as I have occasionally noted, pressure on the region of the appendix, may induce it. This relaxation of the pylorus is in such marked contrast to the resistance which it ordinarily offers to immediate evacuation of the stomach, and occurs so frequently in duodenal ulcer, that numerous theories have been advanced as to the mechanism of its production. Unfortunately, this sign is by no means pathognomonic of duodenal ulcer; it is often seen in association with lesions of the gall-bladder, chronic appendicitis, dilated or lax duodeni, neurasthenia, and other conditions, including carcinoma of the stomach. The flow through the gaping carcinomatous pylorus is usually so voluminous and continuous, however, that the experienced observer will rarely confound it with that noted in duodenal ulcer.

A natural sequence of this uninhibited flow is early evacuation of the stomach, and where successive interval examinations are made the stomach will often be found empty within half or less of the usual time. Some of our cases in which duodenal ulcer was suspected because of the rapid emptying of the stomach were found to be perfectly normal at operation.

HYPERTONUS

Various degrees of gastric tone may occur in association with duodenal ulcer. With long-continued duodenal obstruction the stomach may become hypotonic or even atonic, through broken compensation. Such instances, however, are in the minority. More often an orthotonic or hypertonic stomach is found, and we have seen the latter so frequently that we have come to regard it as quite suggestive of duodenal ulcer, especially if the stomach be of the fish-hook form, and otherwise normal.

A hypertonic stomach alone is, of course, not necessarily diagnostic, but in general it may be stated that in duodenal ulcer the tendency is toward hypertonicity.

DEFORMITY OF OUTLINE

Irregularities in the outline of the bulbus duodeni, where most ulcers occur, have received considerable exploitation as a reliable indication of duodenal ulcer, chiefly by those radiologists who have depended on plate findings rather than on screen examinations. The technic involves the making of a large number of plates in a given case, and, to establish the diagnosis, every plate must show the same filling defect or deformity at a suspected point, a single plate showing a normal bulb being negative for ulcer. Irregularities of the duodenal wall are by no means pathognomonic of ulcer or even of a duodenal lesion. Distortion by adhesions from a cholecystitis, by pressure, or by incomplete filling is not at all uncommon, and deformity due merely to spasm is rather frequently seen. Further, as is observed in ulcers of the stomach, not all ulcers of the duodenum are sufficiently extensive to produce a local distortion that is radiologically demonstrable. The degree of distention of the bulb and duodenum and consequently the effectiveness of visualization of their outlines will depend in part on the ratio between the amount of bismuth flowing through the pylorus and the rate of duodenal evacuation. When the patient stands, the vertical bulbus, which commonly accompanies a fish-hook stomach, will better retain the bismuth by reason of gravity, while the more horizontal bulbus of a steer-horn stomach will drain more rapidly.

As seen at operation three types of ulcer may be distinguished:

1. Those in which the ulcer is evidently limited to the mucosa, and is not seen externally because of the absence of scar tissue. Its presence is determined by the surgeon by palpation and to a less extent by an area of hyperemia, or by petechiae over the ulcer-bearing area after it has been rubbed with the palpating finger or with gauze.

2. Those with visible scar production but without marked contraction or deformity.

3. Callous ulcers with extensive cicatrization and accompanied often by stenosis.

Adhesions are rarely seen in the first type, occasionally in the second, and commonly in the third, especially if there be a perforation or an associated cholecystitis. In the first and second of the above-mentioned types deformity is either absent or so slight as to make its radiologic detection impossible. As a matter of fact, we have seen such ulcers in which no deformity was found either in the Roentgen-ray examination or at operation. In the third type the distortion may be radiologically evident, yet indistinguishable from that consequent on inflammatory lesions extraneous to the duodenum. In this type also stenosis may prevent effective filling of the duodenum with bismuth and thus render negative the diagnosis by this radiologic sign.

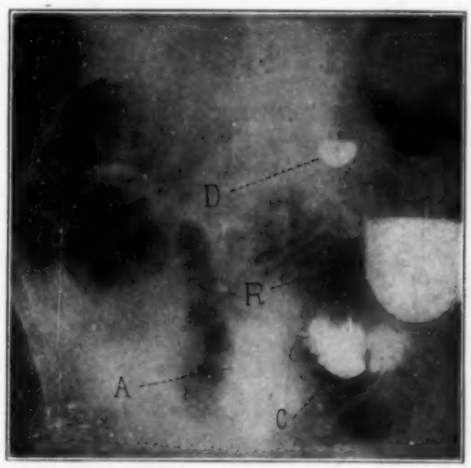

Fig. 5.—The white area indicated by *R* is the six-hour residue in the stomach. Six-hour residue in the duodenum at *D*. Bismuth in small bowel at *A* and *C*.

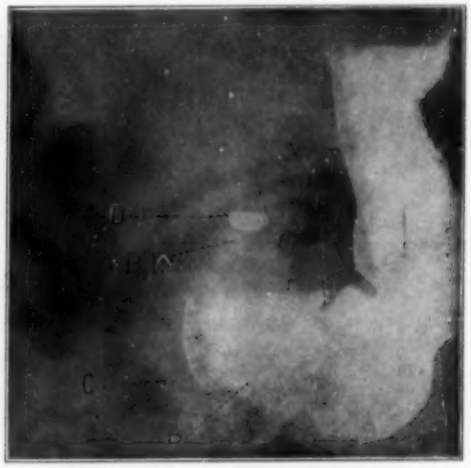

Fig. 6.—Same case as in Figure 5, showing the filled stomach. *P*, deep peristaltic indentations, which were even more marked on the screen. *Pyl.*, pylorus. *D*, residue in duodenum proximal to a stenotic ulcer. *C*, bismuth in small bowel. Operation: Ulcer of the duodenum adherent to the pancreas, producing obstruction.

LAGGING OF BISMUTH

The normal duodenum empties itself so rapidly that bismuth passing through it is with difficulty visualized on the screen and is rarely seen on the plate unless as an ill-defined, faint shadow. In duodenal ulcer, on the other hand, the bismuth often lags in its progress through the duodenum, and shows distinctly on the screen and plate, as a well-outlined shadow. Sometimes the shadow is broken up into separate boluses with vacant areas between, or again it may be more or less continuous. This eccentric progress of the bismuth was one of the first signs noted in the earlier radiologic work; but lagging of the bismuth in the duodenum, even though irregularly distributed, is by no means diagnostic of duodenal ulcer, since it is found quite often where the duodenum is normal, and other intra-abdominal lesions exist.

PRESSURE-TENDER POINT

The value of a pressure-tender point over the duodenum as a diagnostic indication of ulcer is rather uncertain. If the contention be true that localized tenderness to pressure of an abdominal viscus exists only when the parietal serosa is involved, then early duodenal ulcers are exempt from this sign. As a matter of fact, tenderness over the duodenal region is quite frequently noted, but whether this tenderness is ascribed to ulcer or to a lesion of the adjacent gall-bladder depends largely on the bias of the observer toward the one or the other. The varying energy of the examiner's manipulation and the differing sensitiveness of patients are also uncertain factors. Yet a decidedly sensitive point, sharply localized to the visualized duodenum, deserves consideration as a contributory sign. Nearly all patients, with or without lesions, have more or less epigastric tenderness in the median line and this is usually without significance.

SPASMS OF THE STOMACH

A spasmodic hour-glass stomach or slowly traveling incisura may occasionally be seen in cases of duodenal ulcer, but such spasms occur in association with other lesions and have no specific importance.

One radiologist is on record as stating that he can diagnose duodenal ulcer in 100 per cent. of cases; that it is much easier to diagnose than gastric ulcer and that he can determine by the Roentgen ray whether or not the ulcer is healed. These claims are not in accord with my experience nor do they agree with the consensus of opinion of other radiographers. Such extravagant claims do much to bring radiology into disrepute and to prejudice surgeons and clinicians against it. While I believe that the Roentgen ray is perhaps the most valuable adjunct to clinical diagnosis, boastful pretenses and overenthusiasm which its spectacular accomplishments stimulate must be suppressed, in order that the skeptics, of whom there are a few, may not deprive their patients of its real benefits to which they are justly entitled.

STATISTICS

During the ten months covering the period from March, 1913, to January, 1914, inclusive, we have made Roentgen-ray examinations of 2,723 persons for lesions of the digestive tract. Of these, 718 later came to operation and 198 were found to have duodenal ulcer.

A radiologic diagnosis of duodenal ulcer was made in 135 of the 198 cases. In 19 a diagnosis was made of

Fig. 7.—*P*, peristaltic waves, which were stronger at intervals on the screen. *Pyl.*, pylorus. *D*, duodenum. No obstruction. Operation showed callous ulcer of duodenum.

obstruction at or near the pylorus, without further attempt at diagnostic refinement. Sixty-eight cases, diagnosed on minor radiologic grounds as duodenal ulcer, were found at operation to have some other lesion, and of these, 29 were gall-bladder affections, 17 chronic appendicitis and 22 miscellaneous conditions.

Hyperperistalsis, of various degrees, was noted in 113 (57 per cent.) of the 198 cases of duodenal ulcer. Residue was observed in 72 (36.3 per cent.) of the duodenal ulcer cases. Hyperperistalsis in conjunction with a six-hour residue is worth more than 95 per cent. in diagnosis and occurred in 49 (24.7 per cent.) of the 198 cases. This combination was seen in 3, or less than 1 per cent. of the 520 cases other than duodenal ulcer.

Six (3.7 per cent.) of 159 cases of lesions of the gall-bladder manifested increased peristalsis. These are the cases which give the greatest difficulty in differentiating them from those of duodenal ulcer.

Hyperperistalsis was shown in 11 (3 per cent.) of the 361 cases of lesions other than duodenal ulcer or gall-bladder.

The exaggerated peristalsis of duodenal ulcer does not appear to be related to the degree of hyperacidity. The average total acidity in eighty cases with hyperperistalsis was 69.7 per cent., while in seventy-two cases without hyperperistalsis the average total acidity was 74.8 per cent. The highest acidity noted, 120 per cent., occurred in a case with normal peristalsis.

Though the Roentgen ray often fails in the positive diagnosis of duodenal ulcer, its findings have an exclusion value. That is to say, the chance of some other lesion existing is minimized in proportion as the latter is radiologically determinable.

CONCLUSION

Hypermotility, hypertonus, deformity of the cap or bulb, lagging of bismuth in the bulb, pressure-tender point over the duodenum and spasm of the stomach are minor contributory radiologic signs of duodenal ulcer. The combination of hyperperistalsis and six-hour residue or a diverticulum, when found in an otherwise normal stomach, constitute about the only evidence on which a purely radiologic diagnosis of duodenal ulcer may safely be advanced.

FORMALDEHYD *

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Previous investigation of this product has been confined principally to its antiseptic and toxic action. The present work aims mainly at the migration, fate and changes of the drug in the body. This is important since formaldehyd has been recommended in tuberculosis and sepsis, and its compounds are extensively used in therapeutics.

The disinfectant action of formaldehyd was first noted by Loew;[1] the first extensive work with it was reported almost simultaneously by Trillat[2] and Aronson,[3] though as early as 1888, Trillat made a note of the antiseptic action of formaldehyd on the urine. The studies of these investigators related mainly to its action on bacteria, higher animals being mentioned only incidentally. A most exhaustive study of its antiseptic and germicidal effect has been published by Anderson,[4] who also gives the literature.

The action of formaldehyd on higher animals was fully studied by Fischer.[5] His report differs decidedly from many of the previous workers, especially when the gas is inhaled. He states that the inhalation of even small quantities causes bronchitis and pneumonia. This appears contrary to the opinion of Aronson,[6] Fairbanks,[7] de Schweinitz,[8] Kobert,[9] Moeller,[10] Tunnicliffe and Rosenheim,[11] and others. The cause of this difference of opinion seems to be due to difference in methods of administration and time of observation. With strong concentrations of the gas or large doses there is always an inflammatory reaction which may be sufficient to

* From the Pharmacologic Laboratory of Northwestern University Medical School.

1. Loew: München. med. Wchnschr., 1888, xxxv, 412.
2. Trillat: Compt. rend. Acad. d. Sc., 1892, cxiv, 1278.
3. Aronson: Berl. klin. Wchnschr., 1892, No. 30, p. 749.
4. Anderson: Bull. 39, Hyg. Lab. U. S. P. H., 1907.
5. Fischer: Jour. Exper. Med., 1905, vi, 487.
6. Aronson: Ztschr. f. Hyg., 1897, xxv, 168.
7. Fairbanks: Centralbl. f. Bakteriol., 1898, xxiii, 20, 80, and 138.
8. De Schweinitz: Yearbook, U. S. Dept. Agric., 1896.
9. Kobert: Göbersdorfer Veröffentlichungen, 1898, i,
10. Moeller: Quoted from Fischer: Göbersdorfer Veröffentlichungen, 1898, i,
11. Tunnicliffe and Rosenheim: Jour. Hyg., i, 321.

cause death in a very short time. Again, recovery takes place rather rapidly from many pronounced inflammatory conditions produced by formaldehyd. Consequently an animal after a number of days may apparently not have suffered, while if it had been examined earlier an inflammatory condition would have been found. This is especially noticeable after intravenous injection when there is often an inflammatory condition of the eyes and respiratory tract which usually clears up in a few days. A little larger dose in such cases would often prove fatal. Aronson says, from results obtained in Zuntz' laboratory, that the lethal subcutaneous dose for a rabbit is about 0.24 gm. per kilogram of weight. On the other hand, marvelously slight effects have been reported from the inhalation of the formaldehyd vapor. De Schweinitz[8] kept a calf in 2 per cent. formaldehyd vapor for five hours without any ill effect other than watering of the eyes and occasional cough. Some observers have reported instances in which laboratory animals, accidentally or otherwise, were left in rooms which were being sterilized with formaldehyd without permanent ill effects, while others, under apparently similar conditions, found the animals dead. Perhaps the most astounding report is that by Lile,[12] who cites a case of tuberculosis in a man weighing at the time 110 pounds, far advanced in the disease and weak. The patient was placed in a room, 12 by 12.10, and the room was gradually saturated with formaldehyd gas. The temperature, pulse, etc., was recorded by the patient himself, as the nurse could not enter the room because of the irritating gas. The patient was thus kept for four months and left the room weighing 140 pounds. After this he was allowed to sit in the open air and to take short walks. Only a few bacilli were now to be found in the sputum as compared with great numbers at the time of entrance. In the fifth month the patient left the hospital against the advice of the physician and was found six months later in an adjoining county in a dying condition. Lile believes that had he remained at the hospital he would have recovered. The improvement was attributed to the combination of rest and the formaldehyd gas treatment.

It is impossible to give a just estimate to this report. It may be that the initial slight inflammatory reaction was beneficial. The treatment, however, cannot be recommended. Parallel cases have been adopted as worthy of support by scientific men. The formation of glycogen from formaldehyd in the turtle liver was reported by Grube.[13] Schöndorff and Grebe[14] have since shown that this statement is unworthy of further consideration. The rapid adoption of such a view depends on Baeyer's[15] theory of the formation of starches from formaldehyd in plants and the close relationship of glycogen to starches and sugars.

That the action of formaldehyd vapor may be beneficial is, however, contrary to the experience of most workers. Dr. A. I. Kendall tells me that guinea-pigs which were left accidentally in a room during fumigation soon developed pneumonia and died. Others have had a similar experience. The eyes especially were affected. We have noticed some action on the eyes in animals to which the drug was administered intravenously. Inflammation and cloudiness developed in a short time in some cases. This is of interest in view of the well-known action of methyl alcohol on the eye and optic nerve. Methyl alcohol is oxidized to formaldehyd in the body, and it may be that its action on the eye is due to the formation of formaldehyd or formic acid. All animals thus affected recovered in the course of a week, without permanent ill effects.

It is this recovery from large doses that apparently explains the difference of quoted opinions. There is no question that even small doses may, and usually do, give rise to inflammatory conditions, but even in severe cases of intoxication, in which without doubt there was considerable inflammation, recovery without permanent ill effects may, and often does, occur. Recovery has been reported in cases of formaldehyd poisoning in man, in which there was shock, convulsions, collapse and undoubtedly inflammation.[16] The symptoms reported to be present in rabbits when given a toxic dose per os or hypodermically are clonic tetanus, opisthotonos and irregular respiration, leading to early death. Death from inhalation of the vapor is usually due to pneumonia, consequently the symptoms differ from those which exist when the drug is given by mouth.

ABSORPTION OF FORMALDEHYD FROM THE LUNGS

It may be thought from some of the previous statements that formaldehyd is but slightly absorbed from the lungs. It is, however, rapidly absorbed as the following protocol will show.

EXPERIMENT 1.—April 9, 1913, a small dog was given 2 c.c. of 2 per cent. morphin and etherized after thirty minutes. The vagi were cut and a tracheal cannula inserted. The animal was allowed to breathe through a 25 per cent. dilution of liquor formaldehydi for fifteen minutes. There was little influence on the blood-pressure. Respiration could not be observed under the conditions. The blood gave a positive test for formaldehyd after fifteen minutes and it was still positive one hour after the removal of the respiratory bottle. It may be that morphin makes some combination with formaldehyd and holds it in the blood longer than it would remain normally without the morphin.

GASTRO-INTESTINAL ABSORPTION

EXPERIMENT 2.—Aug. 7, 1911, a dog weighing 5 kg. was given 0.1 gm. morphin hypodermically. At 11:15, profuse vomiting followed.

At 11:45, 2.5 c.c. liquor formaldehydi in 75 c.c. water was given by stomach-tube. At 11:50, no vomiting, but retching and twitching movements occurred. At 1:25, bowels moved freely, water-like, and the excreted matter answered to the formaldehyd test.

At 1:45, 34 gm. of blood were taken and distilled, and reacted to formaldehyd tests.

Post-Mortem Examination.—The intestines were markedly inflamed and full of fluid. The urine was strongly alkaline to litmus and effervescent with acid, but gave neither formic acid nor formaldehyd reactions.

ABSORPTION FROM STOMACH

Formaldehyd is also absorbed from the stomach as shown when the drug is introduced into the stomach ligated at the pyloric and cardiac ends. In such a case it can soon be found in the blood and urine. While the formaldehyd is absorbed from the entire gastro-intestinal tract, it is also excreted into it. This is readily seen when the drug is given hypodermically or intravenously. There is some difference in the symptoms, depending on whether the drug is administered by the stomach or

12. Lile, S.: A Tuberculous Patient's Endurance of Formaldehyd Gas, Queries and Minor Notes, THE JOURNAL A. M. A., Feb. 12, 1910, p. 554.
13. Grube: Arch. f. d. ges. Physiol., 1908, cxxi, 636.
14. Schöndorff and Grebe: Arch. f. d. ges. Physiol., 1911, cxxxviii, 535.
15. Baeyer: Ber. d. deutsch. chem. Gesellsch., 1870, iii, 63.
16. Hoyt, Henry F.: Formaldehyd Poisoning, THE JOURNAL A. M. A., April 9, 1910, p. 1202.

intravenously. The following protocol will illustrate this difference.

EXPERIMENT 3.—Two medium-sized dogs were given a preliminary dose of morphin after which each was given a large dose of formaldehyd (50 c.c. 1 per cent. solution). One dose was given intravenously, the other by stomach-tube. This was followed by depression in both animals. The animal which received the drug by stomach was more depressed and more uncomfortable than the other. Twenty-four hours later both animals were killed and the intestinal tract of each examined. Both tracts were highly inflamed and the one from the dog that received the drug intravenously was extremely edematous. Large blebs covered the entire stomach to a most extreme degree. The picture strongly suggested a formic acid action, and formic acid is formed from formaldehyd in the body.

We cannot say that all cases would show such differences. It depends on the mode of administration. We know that when aldehyds are treated with alkalies *in vitro*, a change, known as the Cannizzaro reaction, takes place:

$$2\ RCHO + H_2O \rightarrow RCH_2OH + R.COOH$$

That this reaction can also take place *in vivo* is shown by the following facts which I have corroborated: Pohl[17] demonstrated that saline extracts of the liver can oxidize formaldehyd to formic acid. This is in harmony with the previous work of Schmiedeberg[18] and of Jaquet,[19] who showed that tissue extracts could oxidize aromatic aldehyds. The amount of these oxidations is small, however, when compared with that which occurs in the living organism. The presence of formic acid in the urine was first shown by Buliginsky,[20] and Schotten[21] also proved its presence in urine. Recently Dakin and Wakeman,[22] and still more recently Dakin, Wakeman and Janney[23] have demonstrated the presence of formic acid in the urine and think that it is a catabolite of the higher fatty acids as well as of proteins and carbohydrates. Normal urine contains formic acid, but no formaldehyd. This can be shown by reduction of the urine with magnesium, after which it gives formaldehyd reactions. This varied source of acid gives no support to Baeyer's theory of the formation of carbohydrates unless we modify it to apply also to other foodstuffs.

That formic acid may be easily formed in the body from formaldehyd the following experiment will show.

EXPERIMENT 4.—July 15, 1911, a dog, weighing 5 kg. was anesthetized with morphin and ether. From 10:20 till 12:02, 102 c.c. of 1 per cent. solution of formaldehyd in equal parts of eighth molecular sodium sulphate and 0.9 per cent. sodium chlorid was injected into the carotid. The object of the salines was to promote rapid elimination.

At 12:30, 30 c.c. of blood was taken, acidified with phosphoric acid and distilled. The distillate showed that formaldehyd was still present in the blood.

At 1, the animal was bled to death and the blood distilled as before. No formaldehyd was found. Later work would indicate that there must have been a trace still present. At this time 90 c.c. of acid urine was collected. Distilled from phosphoric acid, the distillate was acid. It contained no formaldehyd, as shown by Hehner's test. It reduced silver nitrate with the formation of a mirror.

In most cases the urine contains a mixture of the acid and aldehyd. When these urines, however, were tested for formaldehyd and afterward reduced with magnesium the test was always stronger after than before reduction, showing that formic acid must have been present. Blood and liver tissue will also oxidize formaldehyd to formic acid.

While this oxidation readily takes place it can be shown that a simultaneous reduction also recurs. If instead of injecting formaldehyd, we use formic acid, free from formaldehyd, a formation of the aldehyd in the body can soon be demonstrated. Dogs which were given formic acid or formates by mouth showed the presence of formaldehyd in the urine though the phosphoric acid distillate of the urine was strongly acid and suggested that most of it was excreted as the salt of the acid. In small doses or when given slowly, much of it may appear as carbonate.

EXPERIMENT 5.—June 16, 1913, a dog weighing 7 kg. was given a small dose of morphin, and thirty minutes afterward 25 c.c. of 25 per cent. formic acid which had been neutralized with sodium hydroxid. This was mixed with milk to a volume of 300 c.c. and given by stomach-tube. During the next thirty minutes the dog vomited probably one-third of it. The urine was collected for eighteen hours; 300 c.c. of urine was obtained, which was strongly alkaline in reaction and effervescent vigorously when acid was added. Tested directly with the Jorrisen, Hehner and Leach tests it showed the presence of formaldehyd. The Jorrisen test was very weak, indicating that most of the formaldehyd was combined, probably as hexamethylenamin. There was enough albumin in the urine to give a color with the Leach test without the addition of milk. Distilled with phosphoric acid, the distillate was strongly acid but also gave strong tests for formaldehyd.

The oxidation and reduction, therefore, as shown by the Cannizzaro reaction, is not confined to aldehyds, but occurs also with acids and probably with other bodies as alcohols, etc. The main action, however, is an oxidation, and it is only after relatively large doses of formic acid salts that the aldehyd can be detected. There is no formaldehyd in normal urine, while a small amount of formic acid is always present.

THE PERSISTENCE OF FORMALDEHYD IN THE BLOOD

Small doses of formaldehyd disappear rapidly from the blood. When it is injected intravenously there is a fall of pressure the extent of which depends on the amount injected. The pressure gradually comes back to normal. If a sample of blood be taken just as the pressure again reaches the normal height, it will be found that there is only a small amount of formaldehyd in the blood. Perhaps this small amount is due to hexamethylenamin formation. The disappearance of the formaldehyd from the blood seems to occur *pari passu* with the rise of the pressure to the normal. This would suggest that the fall of pressure is due to an action of the drug on the vessel-wall or as it passes through the wall[24] (compare Straub's theory of the action of epinephrin, muscarin, etc.). The disappearance from the blood is not a mere penetration into the tissues, but an oxidation. This is shown by the presence of formic acid and carbonates in the urine and by the very small amount, if any, of formaldehyd that can be obtained by dialyzing the normal circulating blood after the pressure has returned to normal. Hexamethylenamin has no such action; it remains in the blood much longer, and can readily be removed by dialysis. After a single dose

17. Pohl: Arch. f. exper. Path. u. Pharmakol., 1897, xxxviii, 65.
18. Schmiedeberg: Arch. f. exper. Path. u. Pharmakol., 1881, xiv, 288 and 379.
19. Jaquet: Arch. f. exper. Path. u. Pharmakol., xxix, 386.
20. Buliginsky: Hoppe-Seyler, Medicinisch-Chemisch Untersuchungen, 1867, p. 234.
21. Schotten: Ztschr. f. physiol. Chem., 1882, vii, 375.
22. Dakin and Wakeman: Jour. Biol. Chem., 1911, ix, 329.
23. Dakin, Wakeman and Janney: Jour. Biol. Chem., 1913, xiv, 341.
24. Straub: Quoted from Meyer-Gottlieb, Verhandl. d. phys.-med. Gesellsch. in Würzburg, 1907.

of 0.5 gm. (7½ grains) by mouth, we have found it for forty-eight hours in human milk.

Most investigators assume that the reaction of formaldehyd with protein takes place with the amino group of the molecule,[25] an assumption that most chemists would make. The difference between the action of formaldehyd and hexamethylenamin favors this assumption. The combination with protein resembles hexamethylenamin, but the combination of formaldehyd with ammonia is so much stronger than the protein combination that when hexamethylenamin is introduced into the stomach or veins little immediate action is apparent for the reason that no detectable amount of it is decomposed by the blood or body-cells. Consequently, it remains in the blood a much longer time. We have not yet decided whether the prolonged administration of hexamethylenamin leads to a greater decomposition. There is a remote possibility that some of the nephritis that develops after prolonged use may be due to this fact.

The short retention of formaldehyd in the blood partly explains the failure of the drug to benefit cases of sepsis and tuberculosis when administered by mouth or intravenously, as has been done. To have any therapeutic value a drug must have physical and chemical properties that will insure the possibility of action. Formaldehyd has not these properties. It is rapidly oxidized with the formation of highly irritating formic acid without having any compensating virtues, and this removes it from the field of internal therapeutics. Cases have been reported in which undoubtedly great injury was done to the patient by the unwarranted intravenous injection of formaldehyd solutions. It is quite probable that quinin, which possesses no irritating qualities, would be without action if it were removed from the blood as quickly as is formaldehyd. It is impossible, therefore, in view of the irritating action and the short duration of the drug in the blood, to see any place in internal medicine for the use of formaldehyd. Any reported benefit that has followed intravenous injections must be attributed, as commonly accepted, to the saline administered with it.

ACTION AFTER ABSORPTION

Respiration is somewhat stimulated, but the action is transient, perhaps because of the irritation, also the rapid oxidation. The heart is weakened by large doses owing to a direct action, as it is after atropin. Both heart and respiration soon return to normal. The blood-pressure is reduced apparently only while the drug is passing through the vessel-walls, for if the blood is tested after the return of the pressure to normal little or no formaldehyd can be found. After large doses and to some extent after small doses, formaldehyd causes an edema. This may in part be due to the formation of formic acid.

The following protocol will illustrate the general action of the drug after absorption:

EXPERIMENT 6.—Aug. 7, 1911, a dog weighing 7 kg. was given 10 c.c. of a morphin solution in divided dose hypodermatically. Fifteen minutes later, at 3:30, 2.5 c.c. of liquor formaldehydi in 100 c.c. milk were given by stomach-tube. There was no vomiting after the formaldehyd. The object of the morphin was to prevent this.

At 10 a. m., it was noted that only 6 c.c. of urine were passed during the night. The bladder, however, contained 88 c.c. The tests for formaldehyd were moderately strong. There were no morphin tests positive. The apparent reason for the retention of the urine in the bladder was the irritation which it caused in the urethra. An intravenous injection of 2.5 c.c. formaldehyd with 10 c.c. 4 per cent. morphin sulphate was made to 50 c.c. in 0.9 sodium chlorid. There were no symptoms of morphin action. The action is more like hexamethylenamin than formaldehyd. Morphin and formaldehyd are antagonistic so far as the respiratory center is concerned, also the action on the intestine, and to some extent the general action.

At 11:30, the respiration was less frequent. The animal was quiet. Apparently the formaldehyd action disappears before the morphin. At 1, 6 c.c. of thick and muddy urine, gave strong positive tests for formaldehyd. Blood gave weak but positive tests for formaldehyd. There was no griping or intestinal gurgling or movements which usually follow formaldehyd. The animal was killed with chloroform and the tissues examined by the local department of pathology.

Post-Mortem Examination.—The vessels of the kidneys and liver were passively congested. The cells were normal. There were no lesions of the other organs. No morphin could be found in the urine. The amount of inflammation was much less than was expected.

Only after large doses do we find anything like the marked inflammatory changes recorded by Fischer. This may be due somewhat to the use of morphin, which is antidotal. The alkaline urine which is sometimes found suggests that one means of neutralizing the aldehyd in the body may be the liberation of ammonia. Francis and Fortescue-Brickdale[26] state that hexamethylenamin is formed in the body. As ammonia is always present in the blood we might expect this. With Mr. C. L. v. Hess, I have been able to find evidence in favor of it. By dialyzing the normal circulating blood through collodion membranes (a modification of Abel's method) we obtained a dialysate after the administration of formaldehyd that was negative with Jorrisen's test for free formaldehyd, but which was positive when tested by Hehner's test, which reacts with combined formaldehyd. In other cases I have been able to demonstrate hexamethylenamin in the urine, by the bromin test,† when only formalin had been administered intravenously. There was no protein reaction, and morphin which also interferes with this test, had not been given.

THE ACTION OF FORMALDEHYD ON BLOOD-PRESSURE

EXPERIMENT 7.—April 30, 1912, a dog weighing 8 kg., under ether anesthesia, was given in the femoral vein, successive injections of 2, 4, 8 and 10 c.c. of 2.5 per cent. solution of formaldehyd. The pressure was taken from the carotid. The smaller doses have very little effect. The larger cause a quick fall with a gradual return. The fall is due to a direct action of the drug on the heart and vessels since atropin does not change the action. When the normal pressure is again attained, little if any formaldehyd can be found in

25. Benedicenti: Arch. f. Physiol., 1897, p. 211.

26. Francis and Fortescue-Brickdale: Chemical Basis of Pharmacology, 1908, p. 71.

† The tests used for formaldehyd are those described in Official and Provisional Methods of Analysis, Bull. 107, Bureau of Chemistry, U. S. Dept. Agric. The tests to distinguish between free formaldehyd and its compounds, as hexamethylenamin, depend on the fact that strong alkalies will not decompose hexamethylenamin. Consequently any test in which the reagent is strongly alkaline may be used to test for free formaldehyd as it is the free body that gives the test. The bromin test (Nicolaier's) for hexamethylenamin depends on the fact that hexamethylenamin when treated with bromin water forms a tetrabrom compound which appears as a yellow precipitate. It is not nearly so delicate as the formaldehyd tests, its limit being about 1:20,000. To show the formation of hexamethylenamin in the blood after the injection of formaldehyd, artificial blood-vessels composed of collodion were interposed between the carotid artery and jugular vein so that these could be immersed in water and the normal circulating blood allowed to dialyze through the collodion. In this way it was found that after the intravenous injection of formaldehyd hexamethylenamin was found in the dialysate. Abel and collaborators have described this method in the Journal of Pharmacology and Experimental Therapeutics January, 1914, p. 275.

the blood. The action on the blood was not investigated. Apparently it is not strikingly altered though Benedicenti[27] considered it important.

C. C. Guthrie[28] found that formaldehyd, when present in blood in a concentration of from 1:900 to 1:740, produced a moderate though decided decrease in the hemolytic power of the serum. This soon approached the normal again. It clotted less readily and did not putrefy so quickly. Whatever the blood change, it must be exerted mainly on the cellular elements, because there is but little action on ferments. The rather weak action on enzymes was shown by Price,[29] and can be readily confirmed. The action of ptyalin and amylopsin on starch solutions containing 1:2500 formaldehyd is not retarded. In milk the same concentration does not alter the effect of rennin, pepsin, pancreatin or steapsin. Stronger concentrations than these have some inhibiting action. This weak effect on enzymes would indicate that if the nitrogen of the enzyme be important in its action it is probably not in the amino form. The stable compound which formaldehyd forms with protein would seem to be amino-nitrogen. The enzyme nitrogen must be different, and since enzymes represent the more dynamic form of protein—if protein at all—the rather inert action of the formaldehyd on them can best be explained by assuming a difference in the structure of dead and living matter. Eggs, milk and proteins generally readily absorb formaldehyd just as ammonia does.

EXCRETION OF FORMALDEHYD

We would expect to find formaldehyd in the body in the same places in which hexamethylenamin is found, and I have found the latter in almost all of the body fluids (confirmatory of others). Formaldehyd, however, does not penetrate so widely as hexamethylenamin — at least it is harder to find as widely distributed. It is excreted mainly in the urine, gastro-intestinal tract and by the lungs. Excretion by the lungs can readily be shown by administering the drug intravenously and letting the animal breathe through milk which can be tested directly.

GENERAL DISCUSSION

Formaldehyd has continued to occupy a prominent place in chemistry, biology and medicine ever since Baeyer[15] suggested that the formation of sugar in plants is due to a condensation of formaldehyd into dextrose. From this theory we should expect to find formaldehyd in the body as a degradation product of carbohydrates and perhaps proteins. It must be said, however, that while the theory is still strongly adhered to, there has been comparatively little evidence presented for it either from the plant or animal kingdoms. So plausible does the theory seem that the since discredited work of Grube,[18] which claimed to prove a formation of glycogen in the turtle liver when it was perfused with a solution of formaldehyd, was readily accepted. The presence of formaldehyd in plants has been established with certainty only recently,[30] and that in very minute amounts. Formic acid is more often found and would seem to be of more importance than the aldehyd, but even this is not found most abundantly where the theory would best place it—in those plants which form starches and sugars in greatest quantity.

The possible utilization of formaldehyd in the body, together with its great antiseptic action, would seem to make it an important drug in medicine. There is no fact, however, in favor of its internal use. It has no specific action for any known bacterium, plasmodium or other causal agent. In usable amounts it supplies no energy and acts only as a foreign body and fatigue agent. It is oxidized very rapidly and the product possesses only injurious influence. Some formic acid occurs as an apparently constant constituent of the urine, but it is probably not an essential constituent, since more has been found in old putrefying samples than in fresh. Not only is there no specific affinity of formaldehyd for bacteria, but within the body the evidence favors the opinion that it preferably unites with dead material or inorganic bodies such as ammonia. To be effective as a therapeutic agent in infective cases a drug must either have some selective action for the invading organism or must have some property of stimulating the protective mechanism of the body. There is no evidence that formaldehyd exerts either. Van't Hoff[31] suggested that the action of formaldehyd as an antiseptic was due to its using up the oxygen and so indirectly asphyxiating the organism. Koch[32] rendered this suggestion untenable by showing that formaldehyd also inhibits the action of anaërobic life. From the symptoms and action on higher forms the mechanism of the action seems to be first a fatigue effect. This comes from the work of the tissues in the attempt to oxidize the substance. The great fatigue causes a probable rearrangement of the living molecules which resembles death. In this rearranged condition formaldehyd forms a strong combination and prevents recovery and return to normal. With small amounts recovery may take place through a mass action or actual replacement of the injured cell or molecule. The nitrogen of the molecule is probably the point of attack, since all oxidations take place mainly in the form elements and especially in that part of the form element which contains the most nitrogen—nucleoproteins.[33]

Most theories advanced to explain the difference between dead and living matter make the condition of the nitrogen the nucleus of their explanation. The action of formaldehyd lends some support to this opinion. It is readily oxidized by living matter and is hard to detect after a short time in the body, while in dead matter it can be detected after an indefinite term. The stability of the dead compound resembles the ammonia combination, and the dead protein combination is most probably with the amino group. With living matter the union is probably also with the nitrogen atom, but this is manifestly different from the more stable compound.

CONCLUSIONS

Formaldehyd is rapidly absorbed from all parts of the gastro-intestinal tract and lungs, and may be excreted again by them. It is rapidly oxidized in the body to formic acid and carbonates. There is also a small amount of a dialyzable compound formed in the blood, which is most probably hexamethylenamin, since the latter is found in the urine (bromin test).

Small amounts of formaldehyd may pass through the body without causing apparent inflammation, while larger amounts always cause some.

27. Benedicenti: Arch. f. Anat. u. Physiol., 1897, p. 210.
28. Guthrie, C. C.: Am. Jour. Physiol., 1904, xii, 139.
29. Price: Twentieth Annual Report of the Bureau of Animal Industry, 1903, p. 114.
30. Curtius and Franzen: Ber. d. deutsch. chem. Gesellsch., 1912, xlv, 1715.
31. Van't Hoff: Vorlesungen über theoretische und physikalische Chemie: II, 118.
32. Koch: Am. Jour. Physiol., 1902, vi, 325.
33. Lillie: Am. Jour. Physiol., 1902, vii, 412.

Recovery from severe inflammatory reactions may be rapid and apparently complete.

Formaldehyd depresses the heart by direct action. Its action on respiration is transient and apparently the result of irritation, though the quick oxidation would account for some of the increase.

Formaldehyd causes a stimulation of the intestinal movements which in large doses is extreme.

The antiseptic action of formaldehyd is apparently due to fatigue, exhaustion and a final firm combination with the drug.

There is nothing to indicate that the drug has a field of usefulness in medicine other than for local use.

Morphin and ammonia are antidotes.

OBSERVATIONS OF THE RESULTS OF NINE MONTHS' EXPERIENCE WITH NEOSALVARSAN AT THE UNITED STATES MILITARY PRISON HOSPITAL, FORT LEAVENWORTH, KAN.

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From April 1, 1913, to Jan. 10, 1914, neosalvarsan combined with intensive mercurial treatment has been the routine followed in all syphilitic cases treated at the United States Military Prison Hospital, Fort Leavenworth, Kan.

One hundred and eight cases of syphilis have been treated during the period mentioned. Three hundred and forty intravenous injections of neosalvarsan have been given. The "intravenous puncture" has been the method employed in all cases. The character of the reactions following injections were as follows: no reaction, 278; severe, 1; moderate, 3; mild, 58. We have considered all cases severe that ran a temperature above 102 F., with or without other symptoms; moderate, when the temperature ranged from 100 F. to 102 F.; mild, normal temperature to 100 F. Cases have been deemed as having no reaction when there was no temperature and no symptoms.

TABLE 1.—REACTIONS ACCORDING TO THE STAGE OF DISEASE

Stage of Disease	Number of Cases	Total No. of Injections	Reactions				Percentage Neg. Reaction
			Severe	Moderate	Mild	None	
Primary	5	25	0	0	6	19	76
Secondary	53	265	1	0	44	220	83
Tertiary	2	10	0	0	0	10	100
Latent	8	40	0	3	8	29	72.5
Total	68	340	1	3	58	278	82.7*

* Average Negative.

In order to insure uniformity of technic only those cases have been selected for use in the following tables in which all of the serum tests have been performed by the same medical officer. In sixty-eight of our cases the serum tests were performed by Capt. Charles Craig, Medical Corps, U. S. Army.

A study of Table 1 shows that the smallest number of reactions occurred in the secondary and tertiary cases. Taking all cases collectively, 82.7 per cent. had no reaction.

The patient having a severe reaction ran a temperature ranging from 102 F. to 104 F. for three days, with severe frontal headache, pain in eyeballs, frequent chills, pain in bones and muscles, vomiting and mild delirium. No reason could be given for this reaction. Twelve men received injections on the same date, the same freshly distilled water being used in each case, there was no other reaction on this date. The general physical condition of the man was excellent. On the fourth day the temperature dropped to 101 F. The gradual decline in temperature and abating of symptoms continued until the patient was discharged from hospital on the seventh day. No symptoms since discharge.

TABLE 2.—THE RESULTS OF TREATMENT WITH NEOSALVARSAN ON THE COMPLEMENT-FIXATION TEST IN THE VARIOUS STAGES OF SYPHILIS

Stage of Disease	Total Cases	Became Negative		Remained Positive	
		No.	Per Cent.	No.	Per Cent.
Primary	5	0	0	5	100
Secondary ...	53	19	35.4	34	64.6
Tertiary	2	1	50	1	50
Latent	8	3	37.5	5	62.5
Total	68	23	33.3	45	66.7

The three moderate reactions all occurred in latent cases, and strangely all complained of the same symptoms, namely, severe pain in back, with frequent desire to urinate. The examination of the urine showed a slight albuminuria in two cases. The symptoms persisted for three or four days, then gradually subsided. The fifty-eight mild cases ran a temperature of 98.6 F. to 100 F. Outside of an occasional headache and general feeling of malaise, there were no symptoms of interest.

Table 2 will show the percentage of cases that have become negative after eight months' treatment. Every patient has received at least five injections of neosalvarsan combined with intensive mercurial treatment.

The mercurial treatment given the cases here reported is as follows: Between April 1 and Aug. 15, 1913, mixed treatment was used in all cases, each individual case had one month of this treatment. Following mixed treatment, proto-iodid of mercury was used for a period of two weeks. After Sept. 1, 1913, intramuscular injections of mercury salicylate of 100 mg. each were given. An average of five injections has been given in each case. In addition to the above, each case is given mercurial inunctions of 6 gm. each on admission to the hospital for neosalvarsan. Our cases average to remain in hospital two days, and as the treatment is given on the morning of discharge, three inunctions have been taken by each case, making a total of fifteen inunctions given each of the sixty-eight cases here reported.

It may appear strange to some that patients are admitted to hospital for neosalvarsan injections. The regulations at this institution are such that this procedure is necessary. About 15 per cent. of the cases reported in this paper, however, are among the prison

guard and enlisted men of the staff corps. None of these patients have been admitted to hospital and not one has shown any reaction after injections of neosalvarsan.

A study of Table 2 shows that 33.3 per cent. of our cases have become negative, while 66.7 per cent. still remain positive. While the number of primary and tertiary cases are small, we believe that larger numbers might alter the results.

In an article by Craig[1] a table similar to Table 2 of this paper is published. Craig's table shows that 57.6 per cent. of his cases became negative, and 42.4 per cent. remained positive after one injection of salvarsan. Table 2 of this article shows that after five injections of neosalvarsan 66.7 per cent. still remained positive.

In the article by Craig,[1] quoted previously, a table is given to illustrate the disappearance of the serum reaction after treatment with salvarsan in weekly periods. In this table a total of 288 cases are taken; 24 became negative after the first week, 108 were negative after the second week, 176 after the third week, 232 after the fourth week, etc.

Craig says in speaking of the table referred to, "It will be noted that considering the total number of cases, the greatest number became negative during the second, third and fourth weeks after administration of the drug, and that in our experience none of the cases became negative after eight weeks." In other words, the total of 288 cases were all negative by the eighth week following one injection of salvarsan.

Referring to Table 3 of this article, 1 of our cases became negative after the first month, 2 after the second month, 5 after the fourth month, 8 after the fifth month, etc. In other words, after twenty weeks, 8 out of our sixty-eight cases were negative, whereas all cases became negative in eight weeks with salvarsan treatment in Craig's cases.

A study of Table 4 shows that the stronger the reaction, the smaller the number of cases that became negative. The best results have been obtained in those cases showing a + — reaction. Cases showing a + + and + reaction have each given 32.5 per cent. of negative reactions. This has also been true in a large number of reports that have been made on salvarsan.

An analysis of Table 5 shows that 1 of our cases became negative in one month, 5 were negative after four months, 9 after five months, etc. In other words, regardless of the intensity of the reaction, 9 of our 68 cases became negative after over twenty weeks of combined mercurial and neosalvarsan treatment. The majority of our 68 cases had received five injections of neosalvarsan before the twentieth week.

TABLE 3.—RELATION OF THE STAGE OF SYPHILIS TO THE TIME OF DISAPPEARANCE OF COMPLEMENT FIXATION AFTER TREATMENT WITH NEOSALVARSAN

Stage of Disease	Total Cases	Month								Total Negative
		1st	2d	3d	4th	5th	6th	7th	8th	
Primary	5	0	0	0	0	0	0	0	0	0
Secondary	53	1	0	0	2	2	4	3	7	19
Tertiary	2	0	0	0	0	0	0	0	1	1
Latent	8	0	1	0	1	1	0	0	0	3
Total	68	1	1	0	3	3	4	3	8	23

TABLE 4.—RELATION OF THE INTENSITY OF THE COMPLEMENT FIXATION TO THE DISAPPEARANCE OF THE REACTION AFTER TREATMENT WITH NEOSALVARSAN

Character of Reaction*	Total Cases	Became Negative		Remained Positive	
		No.	Per Cent.	No.	Per Cent.
+ +	40	13	32.5	27	67.5
+	19	6	32.5	13	67.5
+ —	9	4	44.6	5	55.4
Total	68	23	33.3	45	66.7

* A + + reaction represents an absolute inhibition; a + reaction, any degree between 75 per cent. and an absolute inhibition; a + — any degree between 50 per cent. and absolute hemolysis.

1. Craig: The Influence of Treatment with Salvarsan on the Fixation Test of Syphilis, Bull. No. 3, Surgeon General's Office, June, 1913.

TABLE 5.—RELATION OF THE INTENSITY OF COMPLEMENT FIXATION TO THE TIME OF DISAPPEARANCE OF THE REACTION AFTER TREATMENT WITH NEOSALVARSAN

Character of Reaction	Total Cases	Month								Total
		1st	2d	3d	4th	5th	6th	7th	8th	
+ +	40	1	0	0	1	2	3	3	3	13
+	19	0	0	0	2	1	0	0	3	6
+ —	9	0	0	0	1	1	1	1	0	4
Total	68	1	0	0	4	4	4	4	6	23

Table 8 of Craig's article, before referred to, is similar to Table 5 of this paper, with the exception that weeks instead of months are taken to illustrate the time of the disappearance of the reaction after treatment with salvarsan. This table shows a total of 288 cases; 145 were + +, 110 were + and 33 were + —. Craig states in writing of this table that "the reaction, regardless of its intensity, disappeared most frequently during the second, third and fourth weeks after the administration of

TABLE 6.—RELATION OF THE STAGE OF SYPHILIS AND THE INTENSITY OF THE COMPLEMENT FIXATION TO THE DISAPPEARANCE OF THE REACTION AFTER TREATMENT WITH NEOSALVARSAN

Stage of Syphilis	Character of Reaction	Total Cases	Became Negative		Remained Pos.	
			No.	Per Cent.	No.	Per Cent.
Primary (5 cases)	+ +	1	0	0	1	100
	+	3	0	0	3	100
	+ —	1	0	0	1	100
Secondary (53 cases)	+ +	37	10	26.6	27	73.4
	+	13	7	53.3	6	46.7
	+ —	3	1	33.3	2	66.7
Tertiary (2 cases)	+ +	1	1	100	0	0
	+	0	0	0	0	0
	+ —	1	0	0	1	100
Latent (8 cases)	+ +	1	1	100	0	0
	+	3	1	33.3	2	66.7
	+ —	4	2	50	2	50
Total	+ + 40 + 19 + — 9	68	23	33.3	45	66.7

salvarsan; that the greatest number disappeared during the second week, even in the double plus cases, and that no less than twelve of the double plus cases became negative within one week after the administration of the drug."

Table 4 of this paper shows that 45 out of our 68 cases, or 66.7 per cent., were still positive after eight months of intensive mercurial treatment combined with neosalvarsan, no case receiving less than five injections of the neosalvarsan.

An analysis of Table 6 shows that all of our primary cases, regardless of the character of the serum reaction, remained positive. In the secondary cases, 37 showed a + + reaction, 73.4 per cent. of these cases have remained positive; 13 showed a + reaction, 46.7 per cent. of these have remained positive; 3 showed a + — reaction and 66.7 per cent. are still positive. Of the two tertiary cases, one became negative and the other remained positive. In the latent cases, the one + + reaction became negative, 66.7 per cent. of the + reactions remained positive, and 50 per cent. of the + — remained positive.

In practically all of the literature that has been reviewed on the subject of salvarsan, the authors are all agreed that their best results have been obtained in treating primary cases. According to the results quoted in Table 6, this has not been our experience with neosalvarsan; 100 per cent. of our primary cases still remain positive after five injections of neosalvarsan combined with intensive mercurial treatment.

Ehrlich has stated that "the observation of the Wassermann reaction represents the most valuable method we have of seeing clearly whether the syphilis is genuinely cured."

If this statement be correct — and it is believed that it cannot be disputed — then the results obtained from repeated Wassermann tests are bound to indicate the value of our treatment.

Repeated Wassermann tests have been performed in all of the sixty-eight cases here reported in our tables. The results of our treatment indicated by the Wassermann reactions do not seem so good as they should be; we do not believe they are as good as would have been obtained if salvarsan had been used instead of neosalvarsan. It has been stated by those of wide experience that at least three or four intravenous injections of salvarsan are necessary in order to cause the disappearance of the serum reaction in from 70 to 80 per cent. of patients. Only 33.2 per cent. of our cases became negative after five injections of neosalvarsan combined with intensive mercurial treatment. It seems to us, therefore, that, in order to bring our cases up to 70 or 80 per cent. of negative reactions, 8, 9 or even 10 injections of neosalvarsan will be necessary, and even then we believe it is doubtful if the neosalvarsan will show, even after ten injections, this high percentage of negative reactions.

In a personal interview with one of us (Haines) recently, Captain Craig of the Army Medical Corps, stated that he had been informed by a coworker of Ehrlich's that neosalvarsan was not coming up to the expectations of its discoverers and that it had been their experience that the treatment of syphilis with neosalvarsan was not showing as good results as with salvarsan as indicated by the results of the Wassermann tests.

The surgeon of the United States Military Prison, Fort Leavenworth, Kan., recently received an indorsement from the Commandant of the Army Medical School, Washington, D. C., which stated that they had been unable to find any literature on the comparison of neosalvarsan and salvarsan in relation to effect on the Wassermann reaction, based on a study of a definite number of cases, but there seems to be a general agreement among serologists and practitioners that neosalvarsan in proportionate doses, 3 to 2, does not affect the Wassermann as strongly as salvarsan when given in the usual way.

The results of our work do not seem to warrant the belief that neosalvarsan should be given in the proportion of 3 to 2 of salvarsan, but that it should be given either 6 or 8 to 2.

We have compared the results of Craig and Nichols with our own for the reason that we believe that theirs is the most exhaustive and comprehensive set of papers published of recent date on the serologic side of syphilis relative to its treatment with salvarsan. Further, the serum tests of all of our cases quoted in this paper, and those cases quoted in the papers we have used for comparison, were all performed by the same medical officer. A uniformity of technic has thus been established, and should increase the value of our statistics.

The rigid discipline maintained at this institution renders impossible any conduct which might in any way influence the Wassermann reaction. It must be borne in mind, however, in comparing the results obtained by Craig and Nichols with those obtained by us, that one and two injections of salvarsan were used by Craig and Nichols, whereas five injections of neosalvarsan have been given in all cases reported in this paper.

If it is our aim to "cure" cases and the "cure" is determined only by the serum tests, then we believe that the drug should be used which will reduce the positive serum reactions in the shortest possible time. It has been stated by many that neosalvarsan is a far safer drug to use than salvarsan. It is our belief that a large percentage of severe reactions following the administration of salvarsan were due to faulty technic. Freshly distilled water was not used in all cases, and other precautions, now always used, were omitted. Neosalvarsan is more easily prepared for administration by unskilled persons, but in the hands of those who are skilled in its use, salvarsan is quite as easily prepared.

In the military service the cost of the drug must be taken into consideration. The difference in the cost of salvarsan and neosalvarsan is very slight, yet if twice as much neosalvarsan must be used, it readily becomes the more expensive of the two to the government. This applies in no less degree to those who have occasion for its use in civil life.

CONCLUSIONS

After a careful analysis of the data which have been given in this paper, we believe that the following conclusions are warranted:

1. Five injections of neosalvarsan combined with intensive mercurial treatment, have failed to show as good curative results, as shown by the serum reactions, as did one dose of salvarsan.

2. In order to "cure" 70 or 80 per cent. of our cases it will be necessary to use four or five times as much neosalvarsan as salvarsan.

3. In view of the increased number of injections of neosalvarsan to bring about "cures" as stated in Conclusion 2, it becomes a far more expensive drug to use.

4. The drug should be used which will bring about the best results in the shortest possible time.

5. The complement fixation is of the greatest value in diagnosis, or as an indicator to the results of the treatment.

6. In all doubtful cases at least two or three Wassermann tests should be made before a diagnosis is decided on.

HEMOLYSIS DUE TO INTRAVENOUS INJECTION OF DISTILLED WATER*

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In the performance of a clinical test in which, to wash in a certain salt, the prescribed technic called for the intravenous injection of indefinite amounts of distilled water, it was found by a physician, who was trying the test on his own person before applying it to patients, that sufficient hemolysis was caused to produce chills, fever, considerable malaise, albuminuria and hemoglobinuria, lasting about four hours. It was afterward estimated that, as the individual weighed 84 kg. and as between 300 and 400 c.c. of water were injected in about fifteen minutes in addition to the relatively isotonic drug solution used, the amount of water introduced was equivalent to about 0.4 per cent. of the body-weight. As a search of the literature concerning hemolysis failed to reveal exact information as to the amounts of distilled water that may be injected intravenously without causing noticeable hemolysis, it seemed advisable to work out such quantitative estimations experimentally.

Here and there isolated observations have been recorded which indicate that large amounts of distilled water injected intravenously with considerable rapidity will cause hemolysis. For instance, Ilkewitsch[1] has found that in rabbits amounts of distilled water equivalent to 3 per cent. of the body-weight will cause death; but he was unable to find ill effects from smaller amounts equivalent to from 0.8 to 1 per cent. of the body-weight, and even recommends the injection of such amounts in the treatment of puerperal fever. In experiments on the effect of pancreatic extracts on glycosuria, Murlin and Kramer[2] noted an increased elimination of nitrogen after the intravenous injection of 150 c.c. of distilled water into a medium-sized dog, and thought this "probably due to hemolysis." In the older literature, the action of hypotonic salt solutions on the red blood-cells and tissues was exhaustively studied,[3] and it was known at least as early as the time of Johannes Mueller[4] that intravenous injection of water might cause hemolysis, but failed to do so if a certain proportion of salt was added to it. Nevertheless, when the practice of blood transfusion was first attempted, we find distilled water recommended[5] as a transfusion agent, in preference to physiologic saline solution or blood. Some of the leading physicians[6] of this country even recommended fresh cow's milk as the best transfusion fluid in the treatment of cholera, etc., until it was shown by Culcerq[7] that fat emboli might result. More recently there seems to be a tendency to disregard the dangers of the intravenous use of distilled water, as is shown in Ilkewitsch's recommendations in connection with puerperal fever, its use with salvarsan and elsewhere.

The following experiments, in which marked hemoglobinuria could be produced at will, show that the danger is a real one.

METHOD

To determine the toleration limit, varying amounts of distilled water, proportionate to the body-weight, were injected intravenously into dogs at known rates of speed. The amount of fluid and the rate were controlled by allowing the freshly distilled sterile water to flow from a buret, connected with positive air-pressure, into a small branch of the femoral vein. The first appearance of hemoglobinuria was noted in a bladder catheter, and its duration by repeated observation of the urine.

The presence of hemoglobinemia was determined by withdrawing at frequent intervals small amounts of blood by skin puncture into capillary tubes, which were promptly sealed at one end and centrifuged. This method uniformly gave a clear colorless serum before the experiment and permitted the accurate detection of small amounts of hemoglobin in the serum. From 300 to 500 c.c. of water were given by stomach-tube half an hour before the experiment, to ensure sufficient diuresis. In a few cases complete blood examinations were made before and after the experiment.

RESULTS OF INTRAVENOUS INJECTION OF DISTILLED WATER

Animal		Distilled Water Injected, c.c.	Body-Weight, Per Cent.	Results
Dog	1	100	1.6	Distinct hemoglobinemia.
Dog	1	100*	1.6	Distinct hemoglobinemia (i. e., no apparent decrease in resistance).
Dog	2	98	0.8	Slight hemoglobinemia (½ original amount).
Dog	3	224	3.2	Marked hemoglobinemia and hemoglobinuria (double amount).
Dog	3	224*	3.2	Marked hemoglobinemia and hemoglobinuria (no apparent increase in resistance).
Dog	4	160	2.1	Marked hemoglobinemia, albumin and bile in urine (⅝ original amount).
Dog	2	350	2.6	Marked hemoglobinemia, albumin in urine.
Dog	7	182	3.1	Marked hemoglobinemia and hemoglobinuria.
Dog	7	138	2.3	Marked hemoglobinemia and hemoglobinuria.
Dog	7	250	4.0	Marked hemoglobinemia and hemoglobinuria.
Rabbit	9	35	2.5	Marked hemoglobinemia and hemoglobinuria.
Dog	12	184	1.9	Marked hemoglobinemia and slight hemoglobinuria.
Dog	15	35	0.4	No hemoglobinemia.
Dog	13	88	0.6	Slight hemoglobinemia (persisting less than 1 hour).
Dog	14	225	1.8	Marked hemoglobinemia; slight hemoglobinuria.

* Five days later.

RESULTS

In the first experiment (Dog 1) 100 c.c. (1.6 per cent. of body-weight) was arbitrarily chosen as relatively much greater than the estimated amount that caused hemoglobinuria in the human subject. At the same time a second dog (Dog 2) was given relatively one-half this amount (98 c.c., or 0.8 per cent.). The rate of injection in the two dogs was more rapid than in the man and yet, as may be seen in the accompanying table, both failed to produce more than a moderate amount of hemoglobinemia and no hemoglobinuria.

* From the John Herr Musser Department of Research Medicine, University of Pennsylvania, Department of Medicine.

1. Ilkewitsch, W. J.: Zentralbl. f. Gynäk., 1913, xxxvii, 1399.
2. Murlin, J. R., and Kramer, B.: Jour. Biol. Chem., 1913, xv, 365.
3. Hamburger: Osmotischer Druck und Ionenlehre, i, 360
4. Mueller, Johannes: Textbook of Physiology, Ed. 2, translated by W. Baly, 1840, i, 118.
5. Netter: Gaz. d. hôp., 1879, No. 139, p. 1107.
6. W. Pepper, J. W. Howe, T. Gaillard Thomas (quoted in Med. Rec., New York, 1883, xxiii, 434).
7. Culcerq: Quoted in Med. Rec., New York, see Note 6.

Then, because in the human case the toxic symptoms had appeared only after a second injection, repeated after five days interval, the first experiment (100 c.c. dose) was repeated on the same dog after five days, but again without hemoglobinuria.

In the next dog a relatively double dose, 224 c.c. (3.2 per cent.), was given during fifteen minutes. Five minutes after the injection was stopped, the urine appearing in the catheter was still yellow and free from hemoglobin; eight minutes later it suddenly changed to a dark claret color, which persisted for more than four and less than sixteen hours. The same results were obtained by repeating the experiment five days later, tending to show that no relative increased or decreased resistance of the blood had thus far been developed. Subsequent experiments seemed to show that the toleration limit in dogs and rabbits was near 2.5 per cent. of body-weight, when the water was injected during a period of from five to fifteen minutes; but in two other experiments, designed to determine whether larger amounts might be given without hemoglobinuria if the injection extended over longer periods of time, bloody urine appeared when less than 2 per cent. of the body-weight had been introduced (once at the end of 13 minutes when 1.9 per cent. had been injected, and once after forty-five minutes when 1.8 per cent. had been injected). It appears, therefore, that considerable individual variation exists, for in contrast to these results we have two earlier experiments in which 2.1 per cent. and 2.6 per cent. failed to give hemoglobinuria.

It was found that much smaller amounts of distilled water would give a transient though distinct hemoglobinemia, without hemoglobinuria. In Dog 2, above mentioned, 0.8 per cent. of body-weight of distilled water sufficed to give a distinct hemoglobinemia by the method described, although before the experiment, as in every case, the serum was absolutely clear. Experiments on Dogs 13 and 15 showed that (disregarding individual idiosyncrasy) the limit at which noticeable hemoglobinemia appear was between 0.4 and 0.6 per cent. of body-weight.

In the few blood examinations made, no anemia was noted, the only change being a decrease in the resistance of the red cells (especially in minimal resistance; that is, some hemolysis occurred in relatively stronger hypotonic salt solution). For instance, with Dog 7, whereas before the injection, complete hemolysis occurred in 0.4 per cent. sodium chlorid; partial in from 0.425 to 0.5 per cent., and no hemolysis at 0.525 per cent., one hour after injection of distilled water, complete hemolysis occurred at 0.425 per cent.; partial at from 0.45 to 0.55, and none at 0.6 per cent. These changes were still present after twenty-four hours.

The same toleration limit for hemoglobinuria, roughly speaking, was found to exist for the rabbit. Another experiment showed that, contrary to Ilkewitsch's statement, as much as 8 per cent. of body-weight might not cause death.

A consideration of the results of these experiments shows that although amounts of distilled water necessary to produce hemoglobinuria in the dog are larger than are apt to be used clinically (2.5 per cent. of 80 kg. being 2 liters), nevertheless the smaller amounts produce an undesirable hemoglobinemia. Also other factors, as lowered resistance or individual idiosyncrasy, might with even smaller amounts produce bad results. Furthermore, although these experiments show fairly definite levels for the appearance of hemoglobinuria in dogs, it may well be that in man, as in the case above mentioned, these levels are considerably lower.

On account of the constantly growing number of diagnostic and therapeutic measures in which intravenous infusion is used, it is therefore important that clinicians should bear in mind the possibility of causing hemoglobinemia or hemoglobinuria by the use of fluids which are not rendered isotonic by the addition of the particular salt used.

CONCLUSIONS

1. Rapid intravenous injection of distilled water, in amounts equal to from 2 to 3 per cent. of the body-weight or more, will cause in the dog transient hemoglobinuria and albuminuria.

2. Lengthening the duration of injection time from five to forty-five minutes is without noticeable effect, though a much slower injection might give different results.

3. Hemoglobin-stained urine usually appears in the bladder catheter in from twenty-five to thirty minutes after the beginning of the injection. The hemoglobinuria lasts approximately from four to sixteen hours, depending on the severity of hemolysis.

4. Much smaller amounts (as low as from 0.4 to 0.6 per cent.) are sufficient to cause a noticeable hemoglobinemia without hemoglobinuria.

5. Hemoglobinemia appears within from two to four minutes after the beginning of the injection and may last twenty-four hours.

6. In doses that just fail to cause hemoglobinuria, albumin and bile may appear in the urine the next day.

7. No noticeable anemia is caused, but there is a temporary decrease in the minimal resistance of the red blood-cells.

Chestnut Hill.

BLOOD TRANSFUSION

REPORT OF ONE HUNDRED AND THIRTY-FIVE TRANSFUSIONS BY THE SYRINGE-CANNULA SYSTEM*

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The purpose of this paper is to report some of the results of blood transfusion by the syringe-cannula system, in the cases referred to me from time to time. Limitations of space will not permit of a thesis on the scientific aspects of the subject and the many corelated problems, a discussion of the numerous theoretical considerations involved, or full case-reports and blood and hemoglobin records. These are reserved for a later publication.

The cases transfused vary considerably and include the diseases enumerated in Table 1. The ages of the patients are given in Table 2.

In no case was there thrombosis, embolism or sepsis; in no case was a skin incision made; in no case was anesthesia given; in no case was death due to any untoward effects of transfusion.

Post-mortem examinations were made in two cases several weeks after transfusion. Veins punctured were examined by Dr. Charles Norris, director of laboratories of Bellevue and Allied Hospitals, who could find no

* Read before the Clinical Congress of Surgeons of North America, Nov. 11, 1913

evidence of the puncture. These venous puncture-wounds heal by first intention, and no thrombosis occurs at the site of puncture.

CANNULA INSERTIONS

In the total number of transfusions there were over 243 cannula insertions into veins, a summary of which is given in Table 3.

TABLE 1.—DISEASES IN WHICH BLOOD WAS TRANSFUSED

Diseases	No. of Cases	No. of Transfusions in Each Case	Unimproved
Pernicious anemia (total of 19 cases)	8	1	4
	6	2	3
	2	3	1
	2	4	0
	1	6	0
Aplastic anemia	2	3	2
Splenic anemia with hematemesis	1	5	0
	1	1	0
Anemia (unknown cause)	1	3	0
	2	1	0
Chlorosis	1	1	0
Hemophilia	1	3	0
Hemophilia	1	1	0
Purpura hemorrhagica	1	1	0
	1	2	1
Hemorrhage	4	1	0
Typhoid with hemorrhage (extreme)	2	1	1
Typhoid with hemorrhage (extreme)	1	2	1
Gastric ulcer with hemorrhage	4	1	1
	2	2	0
Gastric ulcer with peritonitis	1	1	1
Hemorrhoids and secondary anemia	2	1	0
Carcinoma	1	2	0
Sarcoma	1	1	1
Diphtheria, septic petechiae	1	1	1
Tonsillitis with petechiae and anemia	1	2	0
Bronchopneumonia	2	1	2
Tuberculosis of lungs	4	1	3
Acute endocarditis	1	2	0
Chronic endocarditis	2	1	0
Sepsis	5	1	1
	1	6	0
Typhoid (septic type)	2	1	2
Postoperative nephrectomy	1	1	0
Postoperative cholecystotomy and hemorrhage	1	3	0
Cirrhosis of liver and secondary anemia	1	1	0
Still's disease with anemia	1	2	0
Acute intestinal intoxication	1	1	1
Malnutrition	9	1	4
Acute lymphatic leukemia	1	1	1
Acute destructive myeloid type of leukemia with pernicious anemia	1	1	1

TABLE 2.—AGES

Ages	No. of Cases	Ages	No. of Cases
Under 6 months	7	From 20 to 30 years	12
From 6 to 12 months	6	From 30 to 40 years	12
From 1 to 2 years	4	From 40 to 50 years	7
From 2 to 5 years	4	From 50 to 60 years	6
From 5 to 10 years	4	From 60 to 70 years	5
From 10 to 20 years	12	From 70 to 80 years	1

The youngest patient transfused was 6 weeks old: weight 6 pounds, 6 ounces. The oldest patient transfused was 73 years old.

TABLE 3.—CANNULA INSERTIONS INTO VEINS

No. of Insertions	Puncture on Which Vein was Entered
MEDIAN BASILIC VEIN	
208	First
7	Second
1	Third
2	Fourth
EXTERNAL JUGULAR VEIN	
15	First
9	Second
1	Fourth

In one case six transfusions were performed at different intervals of time, using the same vein through the same skin-puncture in each operation. Donor McM. was used for eight transfusions at different intervals of time; the cannula was inserted into the same vein through the same skin-puncture on each occasion.

I have described the technic of the work in a previous article.[1]

1. Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, Am. Jour. Dis. Child., July, 1913, p. 28.

QUANTITY OR DOSAGE

Judgment of the amount of blood to be transfused will depend on the size, weight, age, physical condition of the patient, the type of disease to be treated, the object to be gained by transfusion, the presence of other complications, and, lastly, experience. The largest amount I have transfused into one person in one sitting is 2,000 c.c. This quantity was taken from two donors.

DONORS

The quantity of blood that can be drawn from a donor varies. The largest quantity I have taken from one person in one sitting is 1,400 c.c. This man was 5 feet 8 inches in height and weighed 170 pounds. I have frequently taken from 900 to 1,000 c.c. in one sitting, as shown in Table 4.

TABLE 4.—QUANTITIES OF BLOOD TAKEN FROM SOME OF THE DONORS IN A GIVEN LENGTH OF TIME AND NUMBER OF SITTINGS

Donor	Quantity, c.c.	Number of Sittings	Number of Days
T.	1,200	2	5
J.	2,000	3	5
Sister	1,560	3	6
S.	2,240	2	7
Husband	1,660	2	9
McE.	2,650	3	18
M.	1,500	2	14
Father	1,660	6	41
S.	1,150	1	1
J.	1,550	2	7
McM.	3,000	8	150
McG.	2,150	5	42
C.	2,080	5	28
A. C.	2,340	3	21
W. C.	1,000	2	14
Brother	820	1	1
D.	1,860	2	120
D.	1,260	1	1
J.	2,160	3	6
Mother	2,000	2	3
G.	1,600	2	6
Brother	1,200	1	1
Wife	900	1	1

If the case is not one of infectious disease, two-thirds of the amount of blood drawn from the donor is replaced with normal saline solution through the cannula with which the transfusion is performed. When infection is present the same cannula is not used.

TABLE 5.—REACTION TO TRANSFUSION

Donor	Transfusions	Chills	Temperature
Father	17	1	1 case, 104.
			1 case, 104.8.
			1 case, 101.
			2 cases. Increase of 2.
Mother	15	•	1 case, 100.2.
			1 case, 100.
			1 case, 104.
Brother	7	1	1 case, 102.
			1 case, 104.
Sister	4	†1	1 case, 102.
Grandfather	1	•	No rise.
Aunt	1	•	No rise.
Son	1	1	102.
Allen	62	22	4 cases, 104-105.
			10 cases, 102-104.
			12 cases, 100-102.
			6 cases, 99-100.
			30 cases. No rise.

• None. † Slight.

The recuperative power of a healthy donor is quite remarkable. My records on this phase of the subject are still too meager for publication, but from observations thus far made I am convinced that the recuperative power is greater after the first transfusion and gradually less rapid in the succeeding transfusions. Furthermore, after successive bleedings, while the blood-picture may be normal, there may be a little loss of tissue-weight. The loss of weight in all probability is a compensatory process. I hope at a later date to submit a series of observations now being made on this subject.

If at any time the blood-pressure in the donor should fall so that blood is withdrawn with great difficulty, it is an indication that no more blood can be spared at that time. This it will be found will vary; and when there is considerable psychic disturbance the pressure will fall more readily.

REACTION TO TRANSFUSION

It is quite obvious from Table 5 that the reaction from a blood relative in most instances is less than from an alien; yet the blood of many aliens may be fully as congenial as family blood. Of sixty-two transfusions in which alien blood was used chills occurred in twenty-two instances, and a rise of temperature in twenty-six. Hence, practically in 50 per cent. of the cases in which alien blood was used the mixture proved as good as family blood. In the remaining 50 per cent. of the cases no untoward effects occurred in any but three cases, save the chill and temperature reactions; but in three cases hemolysis occurred from which patients recovered. (It should be borne in mind, however, that hemolysis can occur with family blood.)

Providing the same donor be used, there is frequently no reaction after the second and succeeding transfusions; and if any reaction occurs it is usually very mild.

A given donor of alien blood will cause a chill and a fever in one patient and none in another, though the transfusions be done on the same day and both patients have the same disease and the same quantity of blood be given.

The chill and temperature reactions may be associated with a slight degree of hemolysis incident to serum reaction. I have occasionally observed such hemolysis in a few cases evident only by a slight jaundice-tint disappearing within twenty-four hours. In such cases in the succeeding transfusions, the same donor being used, this tint is less or absent.

BLOOD-TESTS

It is customary before transfusion to make preliminary blood-tests, namely, the Wassermann, hemolytic and agglutinin tests. The question I am constantly asked is whether these tests are reliable and really worth while. I think that some who have had an experience in only a few cases are liable to disregard them or attach little importance to them, the few cases probably not including a pair of incompatible serums.

My view has always been that unless the serologic report is respected, even when slight reactions are obtained, it is useless to perform the tests. Laboratory work, unless done well, is worthless. It should be remembered, however, that laboratory methods have their limitations even when done well, and only by constant vigilance can untoward effects be avoided.

In one case the laboratory reported hemolytic tests as negative, but a hemolysis was detected clinically when the patient had received 75 c.c. The transfusion was immediately discontinued. The reaction was only slight and the patient recovered. The hemolytic tests were again made by another serologist who reported as follows:

Recipient cells + donor serum = no hemolysis.
Donor cells + recipient serum = slight hemolysis.
Control, no hemolysis.

TABLE 6.—RECORDS OF TEN CASES OF TRANSFUSION

Case No.	Age, Yrs.	Sex *	Diagnosis	Date of Transfusion	Quantity Transfused	Blood		Remarks
1	16	♀	Anemia; cause unknown.	4/22 4/27 5/7	500 750 500	4/21 R. B. C., 1,400,000 Hb., 15 per cent.	5/12 5,700,000 55 per cent.	12/1. Condition excellent.
2	40	♂	Hemorrhage; traumatic.	5/4	1,200			Complete recovery. Discharged from hospital in two weeks.
3	34	♂	Gastric ulcer with hemorrhage.	7/15	820	7/14 R. B. C., 2,332,000 Hb., 43 per cent.	7/24 4,096,000 65 per cent.	Operation after transfusion. Discharged cured on 35th day.
4	34	♀	Postoperative nephrectomy.	8/7	1,000	8/5 R. B. C., 2,960,000 Hb., 50 per cent.	8/8 5,600,000 80 per cent.	8/28. Discharged cured.
5	34	♀	Cirrhosis of liver..	8/26	960	8/25 R. B. C., 1,448,000 Hb., 16 per cent.	9/26 4,090,000 77 per cent.	Much improved.
6	34	♀	Pernicious anemia..	9/12 9/21	760 900	9/11 R. B. C., 900,000 Hb., 25 per cent.	10/20 4,000,000 75 per cent.	11/1. Discharged much improved.
7	29	♀	Post-partum hemorrhage and sepsis.	8/31	1,320	8/28 R. B. C., 1,000,000 Hb., 20 per cent.	9/11 2,448,000 64 per cent.	10/10. Patient reports to-day. Health excellent. Cured.
8	3	♂	Anemia; cause unknown.	9/18	250	9/16 R. B. C., 3,008,000 Hb., 40 per cent.	9/23 4,600,000 71 per cent.	9/26. Discharged from hospital. Condition excellent.
9	47	♂	Gastric Hemorr.; pleurisy with effusion; consolidation rt. lower base.	12/23 1/2	800 800	12/22 R. B. C., 1,780,000 Hb., 26 per cent.	1/9 3,200,000 70 per cent.	1/15. Patient goes out daily. Cured.
10	28	♀	Gastric ulcer; hemorrhage.	7/26 8/21	600 600	7/25 R. B. C., 950,000	8/29 5,760,000	8/31. Discharged from hospital. Cured.

* In this column ♂ denotes male and ♀ female.

In a second case, in the first transfusion there was no hemolysis and the tests were negative. In the second transfusion, five days following, the same donor was used; hence no preliminary tests were made. A hemolysis occurred; the patient showed a characteristic reaction clinically and hemoglobin appeared in the urine. Hemolytic tests were then made which showed hemolysis of donor's cells by patient's serum. The patient recovered.

In a third case the hemolytic tests were reported as negative, yet the patient hemolyzed the donor's corpuscles. Opportunity was not afforded to check up the accuracy of the laboratory work; therefore, judgment in this case must be suspended. This patient also recovered.

In the large number of donors tested a certain number of incompatibilities were discovered, and these were eliminated. Only once did the laboratory fail, namely, in the case just cited.

In the actual performance of the work I introduce a small quantity of blood and then pause for a short period of time before continuing transfusion. Opportunity is thus offered for observing the compatibility of the blood introduced. Should an undesirable reaction

ever occur indicative of incompatibility, transfusion is discontinued; no harm is done and another donor is procured. Herein lies a factor of safety in this method which is of not a little importance.

The following case-report may illustrate, in a measure, how the method may be applied, and Table 6, containing the records of a few of the cases transfused, speaks for the value of the method.

There is little necessity for me to discuss the results, as "one who runs, sees."

REPORT OF CASE

D. V., man, aged 21, was admitted to the service of Dr. Frank S. Meara, Second Medical Division, Bellevue Hospital, April 16, 1913, with splenic anemia (large spleen with hemorrhages from bowel and stomach). The Wassermann reaction was positive.

November 18: Splenectomy was performed by Dr. John A. Hartwell. At operation the liver was found nodular. According to the pathologic report of the spleen there were chronic interstitial splenitis and chronic passive congestion.

April 18: Coagulation-time, twelve minutes.

April 19: From Donor T., 500 c.c. of blood were transfused into the median basilic vein. There were no chills and no rise in temperature after transfusion.

	April 17	April 20	April 22
R. B. C.	1,700,000	2,400,000	1,800,000
Hb.	20 per cent.		

April 23: Second transfusion; 700 c.c. of blood were transfused from Donor T.

	April 24	April 26
R. B. C.	2,300,000	1,664,000

There were no chills and no rise of temperature after transfusion.

April 24: Coagulation-time, ten minutes.

April 26: Third transfusion; 750 c.c. of blood were transfused from Donor J. There were no chills and no rise in temperature after transfusion.

April 28: R. B. C., 2,550,000; coagulation-time, 6 minutes.

May 1: R. B. C., 1,992,000; coagulation-time, 6 minutes. Wassermann reaction on all donors negative.

NOTE: May 1, patient's disease seemed to destroy the blood-elements; but transfusion made him stronger, decreased the coagulation-time, and all hemorrhages by bowel ceased.

May 5: Wassermann reaction positive.

May 10: Neosalvarsan, 0.45 gm.

May 12: Mercuric salicylate biweekly.

May 19: Neosalvarsan, 0.9 gm.

May 28: Neosalvarsan, 0.45 gm.

June 22: R. B. C., 4,312,000; Hb., 65 per cent. Patient was discharged from hospital, improved; the size of the spleen was unchanged.

October 1: Patient was again admitted to the hospital on account of hemorrhage.

October 12: R. B. C., 4,496,000; Hb., 75 per cent.

October 21: Patient vomited half a basin of blood and passed blood by bowel.

October 27: Fourth transfusion; 740 c.c. of blood were transfused from Donor W. C.

	Before transfusion	After transfusion
R. B. C.	1,664,000	2,352,000
Hb.	18 per cent.	29 per cent.

There was a rise in temperature to 104 after transfusion and a decline to normal next day. There were no chills.

November 10: Fifth transfusion; 930 c.c. of blood were transfused from Donor A. C. (brother of Donor used October 27).

	November 8	November 10
R. B. C.	2,400,000	3,700,000
Hb.	34 per cent.	39 per cent.

There were no chills and no rise of temperature after transfusion.

November 12: R. B. C., 4,080,000; Hb., 45 per cent.

November 18: Splenectomy was performed by Dr. John A. Hartwell. The sixth transfusion was performed during this operation; 220 c.c. of blood were transfused from Donor W. C., who was used October 27. This transfusion was done while spleen was being removed in order to replace the loss of blood incident to operation.

November 24: R. B. C., 5,000,000; Hb., 85 per cent.

December 1: Condition good.

January 21: Discharged from hospital apparently well. An interesting feature of this case is the ability of patient to retain the blood transfused after receiving antisyphilitic treatment and his inability to retain it before this treatment.

Not only is blood transfusion a matter requiring skill, but problems in pathology, physiology, serology, immunity, chemistry and clinical medicine also constantly arise that require special study. Every large hospital in which such work is done should have on the attending staff a hematologist who can give to such work the degree of specialization necessary to meet the many problems and direct the work; thus accidents in the work will be eliminated, a waste of good blood may be prevented and applications seen that might otherwise be overlooked.

This subject has interested medical science and has thrilled the imagination of man ever since Harvey's discovery of the circulation of the blood. In the last quarter of a century some of these dreams have been realized. The difficulties of technic of the old method, the uncertainty of success, the pain, infection and life-long scars to patients and donors, the empiricism of its therapeutics relegated its use to the court of last resort. This method makes possible new applications. It opens a new field of therapeutics — a field that will possibly solve some of the present insoluble enigmas in the treatment of disease and in the conservation of human life.

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BLOOD TRANSFUSION IN DIABETES MELLITUS*

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INTRODUCTION

If about one-fifth of the pancreas of a dog with its artery and vein be properly implanted under the skin of the abdomen, the graft will live. Later, the remaining four-fifths of the gland may be extirpated *in toto* without causing more than a transient glycosuria, the graft serving to prevent an outspoken diabetes. If after the animal has recovered from the second operation the encapsulated rest be enucleated, severe diabetes supervenes. On the other hand, the blood of depancreatized animals has not been found to possess positive diabetogenous powers. This experiment embodies the chief supports for the conception that the pancreas elaborates a "something" whose presence in the body is in some way necessary for the normal utilization of sugar. It is generally assumed that this "something" (internal secretion) leaves the pancreas by way of the blood-stream, that is, through the pancreaticoduodenal and pancreatic veins.

Numerous attempts have been made to demonstrate directly its existence in the blood (or in extracts made

* From the Otho S. A. Sprague Memorial Institute Laboratory of Clinical Research, Rush Medical College.

from the pancreas), but until now these attempts have failed or have only produced results the significance of which is fairly open to question.

Lépine[1] depancreatized dogs and transfused them with large quantities of normal blood. He observed a decrease of the glycosuria with no decrease of the hyperglycemia.

Hess[2] first transferred blood from a depancreatized animal into a normal animal, and then reversing the process, asserts that he obtained an amelioration of the glycosuria.

Forsbach[3] joined two pups of the same litter in such a way that free intermingling of their bloods occurred, as demonstrated by the passage of iodin from one animal to the other. After one of the animals was depancreatized, only a slight glycosuria developed during the brief remainder of its life. Some glycosuria, however, occurred in the mate.

Alexander and Ehrmann,[4] for reasons that are apparent, drew blood directly from the pancreaticoduodenal vein of a healthy dog and injected it into a diabetic dog, but with negative results.

A long series of transfusion experiments was carried out by Hédon.[5] He established vascular anastomoses between diabetic and normal dogs in a variety of ways, prolonging the transfusion in some cases for as long as eight hours. During the actual transfusion there was frequently, but not always, a decrease of the glycosuria, the most pronounced effects having been reported in those instances in which the blood of the splenic vein of the normal dog was carried directly into the portal circuit of the diabetic dog. As in Forsbach's experiment, Hédon also depancreatized one animal after the cross circulation had become established, and failed to observe a glycosuria of the grade usually seen after this operation. Hédon frequently saw toxic symptoms as evidenced by fever, albuminuria and prostration ending in death.

More recently Drennan[6] has injected fresh defibrinated normal blood into the systemic veins of diabetic dogs and observed falls of the glycosuria immediately after the injections, but saw no like effect when blood was used that had stood for some hours. Carlson and Drennan[7] also report that pancreatectomy performed on pregnant dogs near term fails to produce the usual diabetes, but that after delivery of the fetuses, severe symptoms promptly begin, from which they conclude that the blood from the healthy fetuses carrying the pancreatic internal secretion enters the body of the mother and there prevents the development of diabetes.

Very recently, Kramer and Murlin[8] have studied the effects of injecting normal blood and pancreas extracts (made according to Starling) into diabetic dogs, with particular reference to the respiratory quotient. They found no rise in the respiratory quotient, but did observe a temporary fall in the intensity of the glycosuria following a large transfusion. This fall, however, was succeeded by a corresponding rise, and seemed most simply explainable on the basis of a mere retention.

These experiments fall into three groups:

1. Experiments in which normal blood has been transfused or injected into a diabetic dog without establishing a return circulation and in which a temporary depression of the glycosuria has been used as the sole index of an increased utilization of sugar. Against all of these the criticism can be raised that the intensity of a glycosuria alone is no adequate criterion of the influence of the procedure on the disease. This is particularly true when the constancy of the glycosuria before and after the transfusion or injection was not established. Simple retentions would account for a diminished sugar excretion, and there are grounds for believing that in experiments of this kind the action of the kidneys is not infrequently affected.

2. Experiments (like the parabiosis procedure of Forsbach, the pregnant-dog experiment of Carlson and Drennan, and certain of the anastomosis experiments of Hédon), in which cross circulations between two normal animals, or interchange between fetuses and mother, existed, and in which pancreatectomy in one of the animals (or the mother) was not followed by glycosuria of the grade which would be expected were it not for the intermingling of blood elements, but in which fluctuations of the glycosuria were used as the only index of the diabetic condition. These experiments are *a priori* susceptible of two interpretations. An internal secretion passes from the healthy into the diabetic animal, there to provide for the utilization of sugar, or the depancreatized dog actually becomes diabetic while the unutilized sugar and the other diabetic metabolites accumulating in the blood pass over into the body of the fetus or mate and are there utilized, thus preventing the diabetes of the depancreatized animal from manifesting itself in the ordinary way. Lusk[9] and his pupils (Fisher and Wishart[10]) have brought evidence strongly "favoring 'the older view' of Carl Voit — that the presence of abundant food increased the power of the cells to metabolize."

3. Experiments like those under Class 1, but differing from them in that the glycosuria was not made the only index of results. Thus Lépine determined the sugar-content in the blood of the diabetic animal, while Kramer and Murlin observed the respiratory quotient. Experiments of this type have failed to show that the lessening of glycosuria is accompanied by a fall of hyperglycemia or a rise of the respiratory quotient.

Notwithstanding the fact that the results of experiments of Types 1 and 2 are open to more than one explanation, it is also true that the correctness of the hormonic interpretation cannot be summarily dismissed. Moreover, if correct, practical applications might be made; that is, clinical blood transfusion might have a beneficial effect, which, even if temporary, would serve to tide a diabetic patient past a prematurely impending coma or over a temporary crisis such as that presented by an acute illness, a necessary surgical operation, or the like. Theoretically, it is a question of considerable physiologic importance. With these considerations in view, we have long had it in mind that when the stage of diabetes is reached in which intravenous therapy is ordinarily practiced, it might be well to try the effect of substituting fresh blood for sugar solution or alkali. We therefore made a transfusion of blood into the veins of a patient suffering from diabetes mellitus, one for whom all known expedients had been exhausted and who was approaching the end. We took such precautions as are necessary to learn definitely the effects of such treatment.

REPORT OF CASE

History.—The patient, a man, aged 34, had first shown symptoms of diabetes six years previously. Except for the diabetes he had had no illness of note. The Wassermann reaction in the blood was negative. He had no evidence of pancreatic disease affecting the digestive function. There was no history of diabetes, obesity, goiter, or other so-called "ductless gland" disease in other members of the family, either

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8. Kramer and Murlin: Jour. Biol. Chem., 1913, xv, 365.
9. Lusk: Jour. Biol. Chem., 1912, xiii, 27.
10. Fisher and Wishart: Jour. Biol. Chem., 1912, xiii, 49.

in his generation or that of his parents or grandparents. For two years the symptoms had been severe and for eighteen months prior to the transfusion he had been constantly under observation in the Presbyterian Hospital, Chicago, where on numerous occasions his metabolism had been studied for prolonged periods. Prior to entering he had twice become unconscious with what had been diagnosed as diabetic coma, and on several occasions afterward coma was averted only by the enforcement of complete bodily rest and the use of maximum amounts of alkali and wine. He became fully educated with regard to the requirements of a metabolism study and voluntarily cooperated in a highly intelligent way. He knew that the expectancy of life was very limited and solicited the trying of any new line that might even temporarily mitigate his condition or delay the end. On several occasions his

URINALYSIS PRECEDING AND FOLLOWING TRANSFUSION

The periods are of twenty-four hours each, ending daily at 7 a. m. At 4:15 p. m., November 14, the transfusion was begun; that is, after ten hours of the period had elapsed. The volume of blood transfused was 500 c.c., containing 15.6 gm. nitrogen (corresponding to 97.6 gm. protein).

Date	Urine, c.c.	Specific Gravity	Glucose, gm.	Ammonium gm.	Acetone and Beta-keto Butyric Acid gm.	Beta-Hydroxy-Butyric Acid gm.	Nitrogen, gm.
9/ 9	1746	1022	22.9	1.49	5.48	36.8	5.5
9/10	1830	1021	26.3	1.28	5.78	39.7	5.8
9/11	1582	1025	29.6	1.80	4.04	35.9	4.0
9/12	1495	1024	29.0	1.17	5.49	38.9	5.5
9/13	1845	1022	24.3	1.80*	5.90	39.1	5.9
****							
9/14	2117	1025	47.6	1.80	6.99	46.6	7.0
9/15	2195	1021	43.9	2.67	9.08	46.8	9.0
9/16	2000	1027	62.2	3.00	7.70	40.6	7.7
9/17	2055	1028	53.2	3.32	7.64	44.4	7.6
9/18	1565	1031	37.2	2.89	6.30	32.6	6.4

*Estimated. **** Transfusion.

AGGREGATES FOR FIVE DAYS PRECEDING AND FOLLOWING TRANSFUSION

Days	Glucose	Nitrogen	Glucose Nitrogen Ratio	Q	Acetone Bodies†
9, 10, 11, 12, 13	132.1	26.7	...	51.4	190.4
14, 15, 16, 17, 18	**244.1**	**37.7**	**2.1**	**63.9**	**273.6**
INCREASE	112.0	11.0	...	12.5	83.2

† Reckoned as beta-hydroxybutyric acid.

glucose to nitrogen ratio (G:N) closely approximated 3.65:1 on a diet aggregating 2,500 calories (due allowance having been made for ingested carbohydrate). Nevertheless his urine could always be rendered sugar-free by fasting and on semi-starvation[11] could be reduced from 100 or thereabouts to the neighborhood of 50, as it was on the diet used at the time of transfusion. During the time of observation the patient remained quietly in bed.

11. Q, the quotient which represents the severity of a case of diabetes is 100 when the diabetes is "complete," all fed carbohydrate and all sugar formed from protein appearing in the urine as glucose. This quotient, used by Falta and modified by Lusk, enables one to classify diabetes cases from 0, no glycosuria, to 100, maximal severity. As here used:

$$Q = \frac{\text{Grams glucose in urine} \times 100}{(\text{Grams N in urine} \times 3.65) + \text{grams carbohydrate ingested.}}$$

To compare the severity of one case with that of another Q must be reckoned on the same diet for both cases.

Diet.—For two weeks prior to the transfusion and for five days afterward the diet consisted of 800 c.c. of 16 per cent. cream, three eggs (150 gm.), and water, clear tea or coffee to make the total volume of fluid 2 liters (about 2 quarts) daily. The diet was closely watched by patient, nurses and intern, in addition to ourselves. As already stated the patient had always proved trustworthy. The same care was exercised in the collection of excreta.

Donor.—A brother two years older than the patient, a man in robust health and well developed, furnished the blood. He had had no severe illnesses and was free from physical or serologic evidence of lues. His serum had no agglutinative or lytic effect on the patient's corpuscles, and his corpuscles were not laked or agglutinated by the serum of the former. The serologic work was done by Dr. Russel Wilder, to whom our thanks are here expressed.

Transfusion.—This was painlessly performed under novocain by Drs. Arthur Curtis and V. C. David, using a method developed by them[12] by means of which it is possible to transfuse measured volumes of blood. The operation was unattended by visible signs of shock. Blood was taken from the left median cephalic vein and introduced into the corresponding vein in the right arm of the patient. The volume transfused was 500 c.c. Total nitrogen by Kjeldahl, 15.6 gm., corresponding to 97.6 gm. protein (19.5 per cent.).

Results.—The accompanying chart shows the figures obtained from the day the excretions became constant to the end of the experiment when the diet was altered in order to reduce the acidosis. Two weeks after the operation the patient was no worse than he had been on other occasions. A stitch abscess appeared at the site of operation, but ultimately healed. The patient finally died in typical "dyspneic coma."

COMMENT

In the five days prior to the transfusion the patient excreted 132.1 gm. glucose as against 244.1 gm. for the five days following—a difference for five days of 112 gm. The maximum quantity of sugar derivable from the protein and sugar of the perfused blood was $3.65 \times 15.6 + 0.5$, or 57.4 gm., provided all the protein were broken down as it is in the severest diabetes. This would account for less than half the extra sugar which appeared during the second five days.

Although 15.6 gm. of nitrogen were introduced, the aggregate increase in nitrogen for the five days following the transfusion was 11 gm. This is explainable by the facts that the patient had been in a nitrogen deficit for ten days before the transfusion and that the nitrogen in the urine was still above that of the diet when observations were stopped. The ammonium, acetone bodies and diabetic quotient all rose. In short, the diabetes was rendered more severe in every respect. There is no evidence that an increase in the utilization of sugar actually occurred, and was simply masked by the increased quantity of sugar from the protein administered.

When these results are taken in conjunction with the findings of Lépine, Alexander and Ehrmann, Kramer and Murlin, and with recognition of the criticisms which have been made of conclusions drawn from the types of experiments in Classes 1 and 2, and when it is recalled that as yet there has been no convincing evidence that extracts made from the pancreas have had the power to increase the utilization of sugar by diabetic muscles or of diabetic animals as a whole, some reasonable question arises as to whether or not the conception of a blood-borne internal secretion from the pancreas which operates in the tissues and there makes possible a normal utilization of sugar, is capable of substantia-

12. Curtis, Arthur H., and David, V. C.: The Transfusion of Blood. THE JOURNAL A. M. A., Oct. 28, 1911, p. 1453.

tion. The theory advanced by Hédon and others should be reckoned with, that the active principle elaborated by the pancreas may operate only in the pancreas or immediately after leaving it and on coming in contact with the venous blood returning from the intestine.

CONCLUSIONS

The transfusion of 500 c.c. of peripheral venous blood from a healthy male donor into the peripheral veins of a brother suffering from severe diabetes mellitus had a decided effect on the metabolism of the latter, as evidenced by a marked rise in the output of sugar, ammonium, and acetone bodies, and an increase of the glucose to nitrogen ratio. In severe diabetes mellitus blood transfusion is definitely contra-indicated.

FIXATION OF THE PTOSIC STOMACH AND COLON BY RETROPERITONEAL IMPLANTATION

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CINCINNATI

The procedure for the fixation of the displaced or ptosic stomach and colon, as successfully practiced by me during the last five years, is as follows:

FIRST HALF

This consists in the exploration of the lower zone of the abdomen.

1. (*a*) In cases in which no redundancy of the sigmoid is either demonstrated by roentgenoscopy or is not suspected from the clinical conditions, a vertical incision about 8 cm. in length is made in the middle line.

b. In cases in which the redundant sigmoid has been demonstrated by roentgenoscopy, or in which it can be predicated on the symptoms, the abdomen is opened by the Pfannenstiel incision, across both recti, about 1 inch above the symphysis.

2. The alimentary canal is explored, beginning preferably with the cecum, and following out the course of the ileum.

3. All adhesions that may be encountered, are broken up.

4. The vermiform appendix, whether it is actively diseased or not, is removed.

5. If the sigmoid is redundant, it is fixed to the abdominal wall by stitching the proximal layer of the mesosigmoid to the parietal peritoneum. A continuous suture of silk, tightly drawn, is best employed for the purpose, care being taken not to wound either the blood-vessels or the chyle-ducts in the mesosigmoid.

6. This incision is left unsutured for the present, the peritoneal margins being held together by hemostatics, until after the second half of the operation has been completed, when closure is effected by the laminated suture.

SECOND HALF

This consists in the fixation of the ptosic colon, and, when necessary, the stomach, as nearly as possible in the natural position.

1. The upper zone of the abdomen is opened by oblique incision about 8 cm. in length, extending along the right costal margin upward and inward to a point corresponding to the second costal cartilage, and thence directly across both recti muscles to a point corresponding to the opposite costal cartilage.

2. The lower margin of this wound is everted and the peritoneum is stripped back a distance of approximately 1 cm., thus exposing the under-surface of the deep fascia.

3. The ptosic colon and stomach with both omenta are now brought up and are delivered through the incision, the colon being spread out on a warm, moist towel.

4. An opening is made into the gastrocolonic space, into which one or two fingers are passed.

5. With these two fingers acting as guides, half a dozen or more ligatures half an inch apart are passed parallel to each other in and out through the mesocolon, extreme care being taken to avoid all blood-vessels and chyle-ducts. When all these ligatures have been passed, each is tied, thus shortening the mesocolon by several inches.

6. A long strand of chromicized catgut is now employed for a continuous suture, which is fixed in the deep fascia at the lower and outer tip of the wound. It is then passed through the base of the greater omentum, along the margin of the colon in such manner that, when tied, the outer surface of the base of the omentum is tightly approximated against the deep fascia, leaving the omentum to hang down, curtain-like, on the inside of the abdomen. The continuous suture is then carried across by taking a small bite of fascia and a larger bite of omentum, until the 30 cm. or more of omentum has been implanted in 8 or 10 cm. of the everted flap of the wound. Great care must be taken to avoid the omental blood-vessels.

7. The wound is closed by a continuous button-hole suture of chromicized catgut passed through the superficial fascia, muscle and deep fascia of the lower lip, catching the smaller omentum and coming out through the peritoneum, deep fascia, muscle and superficial fascia of the upper lip of the wound. This continuous suture may be fortified by a few figure-of-eight sutures of silkworm gut, the inner loop catching the margins of the superficial fascia and the outer loop embracing the fat and skin.

I have now successfully utilized this technic in a long series of cases, which I hope soon to utilize as the basis of a more analytic communication.

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WHY PROLONGED MEDICAL TREATMENT OF PEPTIC ULCER IS UNADVISABLE *

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To those who have seen much of the surgery of the digestive system I shall perhaps present nothing new; to others, and especially to those of medical rather than surgical inclinations, I hope the arguments presented herewith may appeal.

In my opinion, all cases of peptic ulcer deserve careful study as to diagnosis, followed by proper medical treatment for such a time as may suffice either to bring about complete or nearly complete cessation of symptoms, or to demonstrate that such relief is not obtainable under medical care.

In the course of a few months the pain, acid indigestion, vomiting, hemorrhage and other symptoms, and the rigidity and tenderness so commonly present, should disappear and the patient should regain his proper weight to a reasonable degree, if we are to be assured that a practical cure has resulted. Even in the face of fairly complete relief in all of these directions, the persistence of a dilated stomach from pyloric spasm or mechanical obstruction may still cause us anxiety. If a notably lesser degree of relief has been attained it is proper to consider carefully what obstacles to cure may be present.

First, let us consider the possibility of error in diagnosis. In no disease within my knowledge is reasonable certainty of diagnosis in most cases so closely bound up

* Read before the Denver County Medical Society, Jan. 20, 1914.

with the possibility of error in others. In the first fifty cases of ulcer[1] in which I had operations performed, the preoperative diagnosis was correct in forty-eight, and in the forty-ninth case, was correct in so far as it pertained to the diagnosis of a previous ulcer, although the acute symptoms were due not to a fresh ulcer as diagnosed, but to incarceration and intermittent pinching of the pylorus and duodenum in a Treitz hernia. The remaining case had been diagnosed as one of gall-stones, and with the utmost confidence, since typical biliary colic had been present. All of the symptoms proved to have been due to a duodenal ulcer, which blocked the common duct.

But this showing is entirely too favorable, since ulcer was meanwhile diagnosed in at least a half dozen cases in which some other disease was found at operation, these cases being therefore excluded from the report.

Admitting a high degree of certainty in the diagnosis of gastric ulcer, and especially since the more general use of the bismuth meal and the Roentgen examination, there are yet enough cases in which error seems to be unavoidable to make too long delay in appealing to the surgeon unadvisable. I should not freely make such a statement if my opinion were based solely on my own efforts at diagnosis. I think it justifiable, however, since I have seen repeatedly at operation, errors in diagnosis as to ulcer in cases which have passed through the hands of the greatest authorities on digestive diseases, not only of this country, but of Europe. One patient had been treated for ulcer for half a life-time, yet had no ulcer, nor any sign that ulcer had ever existed, the lesion being in the appendix.

Another case reported to me was treated for years as ulcer by a gastro-enterologist, who has done as much perhaps as any one in America to advance our knowledge of digestive diseases. Cure resulted from the removal of gall-stones, and no adhesion, scar or other evidence of previous gastric ulcer was found at the time of operation, although most carefully sought for by one or our greatest surgeons. The internist, on being told of the result, stated that he was confirmed, by the report, in his belief that he could cure gastric ulcer so that no traces of it could be found on examination of the stomach. Surely this is misguided medical enthusiasm gone mad!

I have personally seen many less spectacular examples of error in patients coming to operation after long-continued treatment for ulcer elsewhere, and I do not doubt that I have myself been guilty of error under similar circumstances.

There is much truth in the remark attributed to Moynihan that "the most frequent site of gastric ulcer is the right lower quadrant of the abdomen"—a sarcastic but deserved commentary on the frequency with which the symptoms of chronic appendicitis are attributed to gastric ulcer. It is unfortunate that the recognition of this state of affairs is not so common among medical men as among surgeons of experience.

If pyloric spasm with great dilatation of the stomach follows the irritation of a chronic appendicitis, so that the pylorus is found in the appendiceal territory, the positive diagnosis may be, so far as I know, practically impossible, as between pyloric ulcer and chronic appendicitis. I have recently examined two such cases which had each been treated for approximately twenty-five years as ulcer, yet the appendix alone was found at fault on exploration.

Perhaps everyone doing much work in this line has seen one of those pitiable cases, in which after years of medical treatment a normal gall-bladder has been drained by one surgeon, an unjustifiable gastro-enterostomy performed by another, a floating kidney anchored by a third, and in which the removal of a retrocecal appendix has at last brought relief. Such troubles are not wholly due to lack of diagnostic acumen in the attendants, for some of the cases are most obscure, and are to be diagnosed and cured only by a general abdominal exploration followed by proper surgical measures.

There are certain unusual conditions within the abdomen incapable of preoperative diagnosis, so far as I know, which may simulate ulcer so closely that years of medical treatment are submitted to in certain instances. Thus, I have encountered pinching of the pylorus and duodenum in a Treitz hernia, as mentioned above; compression of the duodenum by the superior mesenteric vessels, with dilatation of its proximal portion; kinking of the viscus by adhesions about the gall-bladder and pressure on it by gall-stone, and distortion from various causes, bringing about partial obstruction. In some of these cases the diagnosis of ulcer seemed to rest on a solid foundation, since pain, hyperacidity, vomiting, hematemesis, dilatation of the stomach, rigidity and tenderness were present, but medical treatment was of little or no avail in any.

We have just discharged, after cure by operation, one of those unusual cases, in which, as described by Dr. Leonard Freeman, the findings were as follows:

> The duodenum ran directly downward, beneath the transverse mesocolon; then turning to the left it passed under the superior mesenteric vessels, well below the mesocolon, and appeared upon the left aspect of the mesentery of the small bowel. A strong band of connective tissue from the mesentery dragged a loop of the first portion of the jejunum upward to a point just above the place of emergence of the duodenum, in such a manner as to sharply kink the bowel. Above this kink the duodenum was dilated, as was also the stomach to a moderate degree. The pyloric opening was unusually large.

With our present facilities, a case of this kind is utterly impossible of exact diagnosis. We did not think it ulcer, but could not make a more definite diagnosis than that of some mechanical obstruction near the duodenum. The patient had been sent to us with a diagnosis of gastric ulcer requiring operation.

One patient recently operated on had long been suspected of having ulcer because of high acidity, relieved by alkalies and by food, hunger, pain, tenderness and rigidity in the region of the pylorus, but less sharply defined than usual. The appendix was finally thought to be the cause of the trouble. It was found high behind the cecum, with a fresh attack of inflammation. At the edge of the liver, reaching most closely toward the pylorus, was the scar of a gumma. The patient had been subjected to rigorous antiluetic treatment about three years ago by his genito-urinary adviser, but no sign of the gumma had been detected either by him or by me, doubtless because we believed so strongly in the ulcer theory at that time that our judgment was biased. The stomach presented no lesion.

Ulcer is occasionally diagnosed in cases in which the true diseased condition is found in a very small central-line hernia through the abdominal wall. There is little excuse for failure to find the hernia if carefully sought for, but perhaps, for every one that fails to find the

1. Hall, J. N.: Diagnosis of Gastric Ulcer as Tested by Operation, Am. Jour. Med. Sc., May, 1909; abstr., THE JOURNAL A.M.A., May 29, 1909, p. 1790.

hernia, ten physicians fail to recognize the possibilities in the way of gastric symptoms in these cases. There is a very definite association between such hernias, perhaps no larger than a split pea and discoverable only on the closest examination, and ulcer of the stomach. I believe that the explanation must lie in the production of pyloric spasm with gastric retention, as in the case of reflex irritation from the appendix or gall-bladder. This seems more probable in those instances in which the omentum is pinched in the hernia than in other cases.

In my experience the error has generally lain at other doors than that of the internist when operation for supposed gastric ulcer has been undertaken in the gastric crises of tabes. The possibility of the presence of this cause of gastric symptoms should be considered by the surgeon before criticizing the internist for his prolonged medical treatment of the case. Yet I have seen ulcer and the gastric crises of tabes coexist, the ulcer being proved at operation.

Secondly, we should consider the possibility that more than one disease may be present. Gastric or duodenal ulcer is frequently found, apparently as the sequel of a chronic appendicitis, the long-continued pyloric spasm and hyperacidity doubtless being responsible. I have two such cases in the hospital at this time. No treatment of the stomach alone, medical or surgical, can cure such a case, while after appendectomy the ulcer is amenable to surgical, and might be perhaps even to medical treatment.

The combination of ulcer and gall-bladder disease is too frequent to require extended consideration. The not infrequent addition of gall-stone disease in cases of ulcer which have succeeded chronic appendicitis is exceedingly difficult of diagnosis, since every feature of biliary colic, including the typical pain and the jaundice, may be imitated by the extension of a duodenal ulcer to the region of the papilla, with mechanical interference with the emptying of the duct. Involvement of the pancreas, adhesions to neighboring organs or to the abdominal wall, or other addition to the pathology of ulcer is often sufficient to prevent cure by any but surgical means.

Thirdly, we have the danger of complications of ulcer which do much damage before they are recognizable. In about 5 per cent. of my cases of apparently simple ulcer, cancer was already present at operation, demonstrably originating from the ulcer. The presence of a high gastric acidity, even in a patient in the fourth decade, who presents every feature of ulcer, is no guarantee that malignant disease has not already developed, and neither gastric analysis nor roentgenoscopy after ingestion of bismuth, nor yet any other procedure enables us to make the diagnosis in a case of this kind so early as we may make it by exploration. After marked decrease of the acidity, no possible excuse should be accepted for long delay in advising exploration, for the danger of cancer is recognized by all under these conditions. The forceful figures from the Mayo clinic as to the great frequency of origin of gastric cancer from ulcer need not be quoted again in this connection. The danger of death from hemorrhage or perforation is so well recognized as to need but the barest mention. Those who have seen the dire effects of perforation with subsequently developing subphrenic abscess must indeed be prejudiced if they do not admit the desirability of surgical intervention before the advent of such a dreadful complication. Serious damage to the gall-passages or the pancreas, especially in duodenal ulcer, is a frequent finding, and has already been considered.

The general recognition of the fact that the greatly dilated stomach, with its interference with nutrition and its open invitation thereby to tuberculosis or other grave disease, is an extremely common result of active ulcer or the scar of ulcer, should lead us to attempt early cure by operative means. I have grave doubt of the advisability of any prolonged medical treatment of ulcer in this location, since the cicatricial contraction following healing is often a graver condition than that presented by the active ulcer, to say nothing of the danger of cancer.

In approximately 4 per cent. of my operated cases, hour-glass stomach was present from the effects of a girdling ulcer. We cannot tell how serious may be the damage going on in the gastric wall from a continuance of the ulcerative process, and so formidable a complication should be avoided by following the rule to explore early in case of doubt.

From a previous paper[2] I quote the following paragraph regarding arteriosclerosis as a complication of gastric ulcer:

> The long-continued indigestion, with the throwing into the blood-stream of the products of imperfect digestion and metabolism is a prolific source of arterial degeneration in even comparatively young subjects. I have many times noted definitely palpable arteries in patients with ulcer before the middle of the fourth decade. The tendency to a wide-spread tissue degeneration in these cases has not received proper consideration.

There is, then, an early limit beyond which the further use of test-meals, washing of the stomach, administration of bismuth and alkalies, feeding of especially prepared foods, duodenal feeding and other measures short of surgical intervention, are, in the face of modern gastric surgery, utterly unjustifiable. The danger of either hemorrhage, perforation or cancer is greater than the danger of intervention, to say nothing of other possibilities of evil.

Finally: The medical man who treats his patients indefinitely under the diagnosis of hyperacidity, acid gastritis, gaseous indigestion, biliousness, gastralgia, dyspepsia, etc., should familiarize himself with the actual findings at operation in such digestive diseases, as he may do at any clinic at which these conditions are regarded as on the border-line, and hence are investigated conjointly by the physician and the surgeon, as they should be everywhere.

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2. Hall, J. N.: The Complications of Peptic Ulcer, Med. Rec., Sept. 27, 1913, p. 566.

Sanitation and Vacations.—Many a person obeys the call, "back to Nature" with direful results, for when he gets in Nature's solitude he thinks he can disregard Nature's law. Sanitary habits are quite as important in the wilds as in the tenements. It especially grieves the heart of the sanitarian to note how frequently people contract typhoid fever at country, mountain or seashore resorts. The excess of typhoid fever in the autumn now goes by the special name of "vacation typhoid." The insanitary conditions found in many sparsely settled communities temporarily occupied during the summer season often challenge the conditions found in military camps during the bow-and-arrow age. Before people leave the sanitary security of a well-guarded city for vacation grounds, they should demand a bill of health from the health officer.—M. J. Rosenau in *Vermont Medical Monthly*.

A SERO-ENZYME DIAGNOSIS OF SYPHILIS

F. W. BAESLACK, M.A., M.D.
DETROIT

The fact that the formation of proteolytic enzymes in the blood may be stimulated through the parenteral introduction of proteins into the organism led to the discovery of such enzymes in certain normal and pathologic conditions in which complex proteins are swept into the circulation. The process of cleavage through these enzymes takes place whenever proteins not normally occurring in the circulation find their way into it, be this either the result of physiologic processes as in pregnancy, or due to the action of certain pathogenic organisms which by their presence bring about abnormal changes in the cell protoplasm. Within certain limits the organism will be stimulated by the presence of these complex proteins in the blood to the production of enzymes capable of splitting them into their simpler components, which are either assimilated or eliminated by the organism. The function of these enzymes in the blood is in this respect similar to the digestive ferments in the gastro-intestinal tract, in that they split the specific substances which make up our food into simple or native protein molecules capable of assimilation.

The discovery of chorionic epithelium in the blood during pregnancy by Schmorl and Veit induced Abderhalden to study the action of such blood-serum on proteins. As a result of these studies, Abderhalden[1] developed the method for the diagnosis of pregnancy, using placental tissue for the reaction. Freund and Abderhalden[2] extended the application of this method to the diagnosis of neoplasms. More recently this method was applied to the diagnosis of tuberculosis by F. Jessen,[3] while Bundschuh and Roemer,[4] as well as J. Fischer,[5] made use of it in psychiatry. The scope of this preliminary communication does not permit the citing of the already extensive literature, which demonstrates the applicability of this method to many pathologic conditions.

In view of these facts it seemed advisable to see if the serum of syphilitic patients contained such enzymes as are directed toward the *Spirochaeta pallida* or the cell degenerations caused by its presence in the body.

The serum normally contains dialyzable substances which will give the reaction when no tissue is added. It is evident from this that not only such reactions must be considered positive which give a dark violet color, but also one must compare the reaction in the two tubes for differences in depth of color.

A positive reaction shows that the serum examined contains substances which have influenced the added protein so that it has become dialyzable, that is, the serum contains proteolytic ferments. The formation of these proteolytic ferments, which are considered specific, presupposes the presence of split protein in the serum. Thus a positive reaction proves (1) the entrance into the blood of substances foreign to it, and (2) the formation of a specific proteolytic ferment in the serum. The reaction disappears in case of clinical cure, or if the entrance of foreign proteins into the blood-stream ceases, and we may assume that the organism has lost the power to produce the specific ferments in cases in which the disease is still active. If one considers the course of syphilis in its various forms, which again may differ markedly in themselves, we must realize that aside from the virulence of the infecting agent there must be present in the organism conditions which possibly are the cause of these various manifestations of the disease.

The tissues made use of in these experiments are the glistening pearly white gummas resulting from the inoculation of rabbits with syphilitic tissue or blood of patients affected with syphilis. The resulting lesions, as pointed out in a previous paper,[6] are not gummas in the strict sense of the term, but mucoid degeneration of the tissue. These lesions contain the *Spirochaeta pallida* in large numbers, and practically all the original tissue has undergone degeneration. In addition, these lesions are almost free from blood and so exclude a possible factor of error in the test. By carefully trimming away any apparently sound tissue the gumma are cut into small pieces about 4 c.mm. in size, boiled for ten minutes, the water is changed and the tissue boiled again for five minutes. This process is repeated until the water in which the tissue has been boiled no longer gives the color reaction with triketohydrindenhydrate. Then it may either be placed in a sterile bottle with the water in which it was boiled last, to which a small amount of chloroform and toluol have been added, or the tissue may be dried *in vacuo* over sulphuric acid and ground into a fine powder, which is kept in an amber-colored glass bottle. If the stopper of the bottle is dipped into toluol the ground-up tissue will be under a toluol vapor.

Before the reaction is undertaken it is well to test the dialyzing thimbles. This is done by soaking them in water and then bringing the water just to a boil. After this has been repeated they are set aside to cool, and some chloroform and toluol are added to the water. The dialyzing thimbles are first tested with fresh unhemolyzed rabbit's serum to find out whether they allow protein to pass. Those thimbles which allow the passage of protein should be discarded. After the dialyzing shells have been cleaned as described above, the second preliminary test is carried out with a 0.5 per cent. aqueous solution of silk peptone. The shells should allow the amino-acids of the peptone to pass. Shells fulfilling these preliminary conditions may be used for the tests for quite a period, when they should be tested again for any possible flaw. The test is carried out as follows: Eight c.c. of sterilized filtered water are placed in the glass tubes and about 6 drops of toluol are added. Each single test requires three glass tubes and as many shells. The serum, which must not be more than eighteen hours old, should be clear and free from any traces of hemolysis. From 0.8 to 1 c.c. of serum are required for the test. To reduce the sources of error the tissue is boiled again for five minutes before the test is made, and the water in which the tissue was boiled is tested with triketohydrindenhydrate for the presence of amino-acids. The dialyzing shells are picked up with a pair of hemostats; a piece of tissue is placed in the bottom of the first shell with clean forceps. To this is added by the use of a small clean funnel half of the clear serum available, and lastly a few drops of toluol. The outside of the shell is carefully rinsed with distilled water and the shell placed into the glass containing the water and toluol. The glass container is closed with a stopper to prevent evaporation. The sec-

1. Abderhalden: München. med. Wchnschr., 1913, No. 13, p. 701.
2. Freund and Abderhalden: München. med. Wchnschr., 1913, No. 14, p. 763.
3. Jessen, F.: Med. Klinik, 1913, No. 43, p. 1460.
4. Bundschuh and Roemer: Deutsch. med. Wchnschr., 1913, No. 42, p. 2029.
5. Fischer, J.: Deutsch. med. Wchnschr., 1913, No. 44, p. 2138.
6. Baeslack, F. W.: Jour. Infect. Dis., 1913, xii, 60.

ond dialyzing shell receives the same amount of serum and toluol but no tissue, and is otherwise treated as the first. The third shell receives tissue plus an equal amount of sterile distilled water and toluol, but no serum. If two or more serums are tested, one control of tissue will do for all. The tubes are placed into the incubator for from twelve to sixteen hours. By carrying out this test late in the afternoon the testing of the dialysate may be done the following morning.

After removing the dialyzing shell, 5 c.c. of the dialysate are placed into a clean test-tube and 0.2 c.c. of a 1 per cent. aqueous solution of triketohydrindenhydrate are added, and the whole is allowed to boil actively for one minute.

The dialysate of the second tube containing only serum will frequently give a color-reaction. This is due to the presence of amino-acids in the serum. The interpretation of the test depends on the difference in the depth of color. The test is positive if the dialysate from Tube 1 gives a darker color-reaction than that of the second tube. The dialysate of the third tube should not give any color-reaction whatever. If the color-reaction of the first and second dialysates are of the same intensity or if the dialysate of the second tube gives a darker violet color than that of the first, the diagnosis is negative.

The entire procedure demands careful, clean technic, which, however, is not difficult to master.

WASSERMANN AND SERO-ENZYME REACTIONS

Case	Name	Sex*	Age	Date in Clinic, 1913	Stage of Disease	Treatment	Wassermann R.	Sero-Enzyme Test	Amt. of Serum Used for Each Tube, c.c.
1	B. H.	♂	23	12/12	Beginning of secondary stage	None	—	+	0.5
2	M. R.	♀	19	12/12	Secondary stage	None	++	+	0.5
3	T. T.	♂	29	12/15	Primary lesion	None	—	+	0.5
4	H. W.	♂	28	12/15	Secondary stage	None	—	+	0.5
5	T. B.	♂	21	12/17	Secondary stage	0.9 gm. neosalvarsan	+++	+	0.5
6	E. M.	♂	28	12/17	Tertiary	?	†	+	0.3
7	M. N.	♂	34	12/19	Primary lesion	None	+	+	0.5
8	W. T.	♂	39	12/19	Past secondary	0.9 gm. neosalvarsan twice	++	+	0.5
9	E. O.	♂	42	12/22	Primary lesions	None	—	+	0.5
10	F. H.	♂	32	12/23	Secondary eruption	None	++	+	0.5
11	E. O.	♀	37	12/23	Secondary eruption	Potassium iodid	±	+	0.25
12	S. H. H.	♂	26	12/24	Secondary eruption	?	—	+	0.5
13	J. O.	♂	24	12/26	Primary lesion	None	++	+	0.5
14	F. W.	♂	24	12/29	Secondary period (healed)?	2 inj. intrav. of salvarsan + mercury or potassium iodid	—	—	0.5
15	J. H.	♂	37	12/29	Secondary lesions	?	—	+	0.5
16	E. F.	♂	24	12/30	Syphilitic anemia	2 intrav. inj. of salvarsan and potassium iodid	+++	+	0.5
17	J. P.	♂	26	12/31 1914	Tertiary	?	++	+	0.5
18	E. W.	♂	25	1/2	Primary lesion	None	++	+	0.5
19	D. B.	♂	25	1/2	Secondary	?	++	+	0.5
20	St. P.	♂	52	1/5	Chancroid	.....	—	—	0.5
21	A. S.	♂	33	1/5	Primary lesion	None	—‡	+	0.1
22	G. M.	♂	?	1/5	General paresis	?	++§	—	0.5
23	M. B.	♂	?	1/5	General paresis	?	++§	—	0.5
24	C. A.	♂	36	1/7	Spec. Inf. 2 yrs. ago; no clinical symptoms	2 intrav. inj. of neosalv. + mercury + sod. cacodylate	++	+	0.3
25	M. S.	♂	34	1/9	Chancroid		—	—	0.5
26	No. 235	..	28	1/9	Secondary eruption	?	—	+	0.5
27	No. 252	♂	26	1/13	Late secondaries	?	+	+	0.3
28	R. B.	♀	39	1/16	Tertiary	?	+	+	0.25
29	B. C.	♂	26	1/16	Primary lesion	None	+	+	0.5
30	M. S.	♂	39	1/16	General paresis, 5 yrs.	?	+	+	0.5
31	H. D.	♂	45	1/17	Tabes	?	++§	—	0.5
							+	+	0.5
32	A. C.	♂	50	1/17	Tabes 6 years	?	++§	—	0.5
							+	+	0.5
33	K. M.	♂	54	1/17	Tabes 18 years	?	+++§	—	0.5
34	A. E.	♂	38	1/17	General paresis	?	++§	—	0.5
35	A. C.	♂	30	1/17	General paresis	?	++§	—	0.5
							+	+	0.5
36	E. F.	♂	24	1/17	General paresis	?	++§	—	0.5
37	M. L.	♂	24	1/17	General paresis	..	++§	—	0.5
							+	+	0.5
38	W. M.	♂	69	1/19	Tabes	?	+	+	0.5
39	C. M.	♂	39	1/19	Early tabes?	?	++	+	0.5
40	G. L.	♂	40	1/19	Late secondary	2 inj. of neosalvarsan	++	+	0.5
41	J. Cl.	♂	33	1/19	Late secondary	2 inj. of neosalvarsan + mercury	++	+	0.5
42	D. M.	♂	20	1/21	Tertiary lesion	?	+++	+	0.5
43	A. K.	♀	44	1/21	Tertiary lesion	?	+	+	0.5
44	F. H.	♂	36	1/21	Early tertiary	Mercury and one inj. of neosalvarsan	++	+	0.5
45	Ed. F.	♂	25	1/23	Primary lesion	None	+	+	0.5
46	O. W.	♂	18	1/23	Chancroid	.....	—	—	0.5
47	M. E.	♀	33	1/27	Tertiary lesion	.....	+++	+	0.5
48	A. A.	♀	26	1/27	Secondary stage	.....	++	+	0.5
49	F. S.	♂	13	1/29	Scarlet fever	.....	—	—	0.5
50	A. K.	♀	22	1/29 1913	Scarlet fever	.....	+	—	0.5
51	J. M.	♂	18	12/18	Normal	.....	—	—	0.5
52	B.	♀	20	12/18	Normal	.....	—	—	0.5
53	F. B.	♂	39	12/18 1914	Normal	.....	—	—	0.5
54	M. S.	♂	26	1/30	Normal	.....	—	—	0.5
55	E. E.	♀	26	1/30	Congenital	?	..	+	0.5

* In this column ♂ denotes male and ♀ female. † Not taken. ‡ The small quantity of serum available in Case 21 may account for the result. § Spinal fluid.

In addition to the three cases of chancroid (Cases 20, 25 and 46), the serums of four normal persons and two scarlet fever patients were tested. The three cases of chancroid gave a negative sero-enzyme reaction and were also negative with the Wassermann reaction, which was true likewise of the serums of the normal persons. The serum of scarlet fever Case 49 was positive with the ox-heart antigen and negative with the fetal liver and rabbit-gumma antigen, while the serum of scarlet fever Case 50 gave a positive Wassermann (+ sign) reaction with the three above-named antigens. Both serums were negative with the sero-enzyme test.

The accompanying table was arranged from the histories taken at the time the patients visited the clinic.

The entire number of fifty-five serums includes forty-six cases of syphilis. Eight serums came from patients in the primary stage of the disease, eighteen from those in the secondary stage, seven from tertiary syphilis, five from tabetics, seven from general paretics and one from a case of congenital lues. The remaining nine serums include four from normal persons, three from cases of chancroid, and two from scarlet fever patients.

Of the two scarlet fever patients, one, Case 50, gave a positive Wassermann with the three antigens employed, while the sero-enzyme reaction was negative. Aside from this case, the results of the Wassermann reaction correspond with the findings of the sero-enzyme reaction in the eight remaining serums. The cerebrospinal fluid obtained from nine cases of tabes and general paresis gave a positive Wassermann reaction, while the sero-enzyme test was uniformly negative, demonstrating the absence of the enzyme in the cerebrospinal fluid. This divergence also shows that the factors entering into the Wassermann reaction are distinct from those bringing about the sero-enzyme test. The lack of these enzymes in the cerebrospinal fluid may be due to the relatively small number of white blood-cells present in this fluid, since the production of these enzymes may depend on these cells, for the serums from patients in this stage of the disease gave a uniformly positive sero-enzyme reaction. Case 14, in which the patient presented himself at the clinic with a recently acquired gonorrhea and gave a history of specific infection followed by prompt treatment, was free from any clinical signs of syphilis. Since both the Wassermann and sero-enzyme tests were negative, it is probable that this patient has been cured.

While the Wassermann reaction at times is negative in the primary stage of syphilis, and was negative in three cases out of eight (Cases 3, 9 and 21) in this series, the sero-enzyme reaction was positive in all. Out of the eighteen cases of secondary syphilis, four, Cases 4, 12, 16, 26, gave a negative Wassermann reaction, but all gave positive sero-enzyme reactions. The specific enzyme present in the serums of syphilitics is probably directed against the degenerated cell proteins rather than against the infecting agent. The sero-enzyme reaction appears to be specific and demonstrable at an earlier period than the complement-fixation test. This may be due to the production of specific enzymes stimulated by minute quantities of protein foreign to the blood, and because these proteins are constantly finding their way into the circulation in the course of this disease. The Wassermann reactions have been carried out with three antigens, and have been repeated in most instances for the purpose of double-checking the results.

I wish to thank Dr. R. H. Varny for carrying out some of the Wassermann reactions, and Dr. William E. Keane, and Dr. G. L. Kiefer for giving me access to their clinics.

THE REMOVAL OF THE APPENDIX IN ALL CASES OF APPENDICITIS WITH LOCALIZED ABSCESS

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As many inquiries have been received since the publication of a former article[1] dealing with the removal of the appendix in all cases of appendicitis with localized abscess, I desire again to present the subject for consideration and criticism.

In discussing the subject with many surgeons of large experience I find that the majority still seem inclined to follow the plan which was apparently in universal use many years ago, that is, simple incision and drainage of the abscess, making no effort to remove the appendix unless it presents itself within the confines of the abscess, practically free from adhesions and in fact inviting removal. Furthermore, the trend of the majority of articles dealing with this question, as well as the method of handling these cases at the various large surgical clinics, would indicate that by far the greater number of operators remove the appendix only in a comparatively small percentage of such cases.

The reason usually given by operators who follow this course is that it is unsafe to separate the adhesions forming the boundary of the abscess, thereby during the search for the appendix, liberating pus and septic material into the uncontaminated areas of the peritoneum. This was the opinion held by myself up to some six or seven years ago, my former custom being to remove the appendix only in instances in which such removal was easy and could be accomplished with the separation of few adhesions.

During the past seven years I have operated on 501 cases of appendicular abscess sharply localized. This series does not include any case in which at operation, the general peritoneal cavity was found to be infected, or cases of gangrene of the appendix without the formation of a distinct peri-appendicular abscess. In this series of cases the appendix was removed in every instance at the primary operation whether easily detected within the abscess cavity or whether deeply buried by adhesions.

In the 501 cases six deaths occurred. One patient, a little girl aged 4, died thirty-six hours after operation, from what cause I do not know, as this operation was done in the country and I could get no clear postoperative history. A man, aged 49, died sixteen days after operation from cardiac thrombosis. A boy, aged 17, died four days following operation from septicemia. Another patient, a woman, aged 31, died from septicemia six days after operation. A man aged 27, died twelve days following operation from postoperative obstruction, further intervention being refused. The sixth patient, a man aged 24, died from secondary hemorrhage the third day after operation. The ages of the patients included in this series ranged from 10 months to 84 years.

The results secured are infinitely better than those I obtained under the old plan of treatment, in which in a large proportion of cases, the appendix was allowed to remain undisturbed, with a resultant mortality of 8 per cent., whereas, in the series of 500 cases of appendicitis with abscess, mentioned above, the appen-

1. Knott, Van Buren: Treatment of Localized Appendicular Abscess, THE JOURNAL A. M. A., Aug. 12, 1911, p. 525.

dix in every instance being removed, the mortality was 1.2 per cent.

It is to be noted that in the six fatal cases of this series, not a death occurred from peritonitis, yet it seems to be the fear of inviting, or even occasioning a spreading peritonitis which restrains many operators from removing the appendix in abscess cases. Since the adoption of the Fowler position and drainage of the peritoneal cavity by means of a large split rubber tube inserted to the bottom of the rectovesical pouch or culdesac, supplemented by saline proctoclysis, peritonitis has been shorn of its terrors.

It was noticed that, in those cases of diffuse septic peritonitis due to perforation of the appendix which were so treated, convalescence was almost uniformly rapid and smooth and without distressing sequelae. The fear of diffuse septic peritonitis having been removed, the way toward the removal of the appendix was cleared and the systematic removal of the appendix in all cases became the logical, routine procedure.

During the early work in this series it was seen that, during the search for and the removal of the appendix, small pus collections were frequently encountered here and there among the adherent coils of intestine and omentum, whose presence had not been suspected and which would have been overlooked had not the adhesions been separated. Drainage of the larger pus collection would not have reached these smaller hidden septic foci. These have been found on both sides of the abscess cavity and as many as eleven distinct pus collections have been noted.

In many instances, in which because of a high location of the appendix the abscess cavity was high and tightly walled off, free separation of the adhesions forming its floor would reveal a large amount of pus or purulent serum in the rectovesical pouch, at times quite remote from the appendix, which would certainly have been otherwise overlooked. Thus the reasons have been exposed for many a secondary operation for what has been improperly termed a secondary abscess. Increased experience with the method has tended to confirm in every particular the accuracy of this early observation.

In the series of cases which forms the basis for this article, there was but one death from postoperative obstruction. The free separation of adhesions tends greatly to lessen the frequency of this serious and often fatal complication, as it establishes free communication between the region of the cecum and appendix formerly occupied by the abscess cavity, and the lowermost pelvic peritoneal pouch, permitting the best drainage of both regions by a single tube and thus doing away with the necessity for multiple drains either of tube or gauze.

The percentage of fecal fistulas has in this series of cases been unusually small. I am not able to give the exact figures, as many of the patients were operated on at their homes, but in those patients operated on in the hospital and these were by far the more numerous, the occurrence of fecal fistulas was seldom noted.

This may be at least partially explained as follows: The removal of the sloughing appendix at the time of the primary operation, with proper management of the stump or in some cases the diseased cecal wall itself, has limited the tendency of the gangrenous process to invade adjacent intestinal tissue. Again, the separation of all adhesions, entirely obliterating the abscess cavity and throwing together the space formerly occupied by the abscess and the lower peritoneal pouch, and the insertion of one large tube in the rectovesical culdesac for drainage, renders unnecessary the placing of multiple drains, either of tube or gauze, in the cecal region where, by exercising pressure on tissues whose vitality is impaired, they may determine the formation of fistulas by pressure necrosis.

With the patient in the exaggerated Fowler's position, all adhesions having been separated, we secure at once the collection of septic fluids in the most dependent portion of the peritoneal sac, whence they are rapidly conveyed to the surface through the large split rubber tube with the loose-fitting gauze wick.

Because of the rapid free drainage so secured, the tendency to postoperative sepsis manifested by hepatic abscess, pylephlebitis, subphrenic abscess, empyema, etc., is much less marked than in those cases in which a leaking appendix is permitted to remain, hourly adding its burden of septic and infectious material to the load which is in many instances already straining the powers of resistance and recuperation to the very limit.

In support of this statement I may mention that Dr. George Ross[2] of Philadelphia, reported twenty-four cases of subphrenic abscess, practically every case occurring in patients in whom, at the primary operation, the appendix had been left, and stated that for four years he had not left an appendix in operating in these abscess cases and that he had had no occasion for regret.

In my experience a second operation in appendicitis with abscess formation in which the first operation consisted merely of incision and drainage, has been necessary much more frequently than is usually stated in text-books. As nearly as I can estimate it occurs in about 25 per cent. of cases.

I recall one patient, the brother of a physician, who had been operated on four times in three years for appendicitis with abscess, merely by incision and drainage. I removed this man's appendix from a mass of dense adhesions with abscess during his fifth attack, which occurred also within the three-year limit. At the request of the physician who had performed the initial operation, I have several times operated on patients who had following incision and drainage, a recurrence of the peri-appendicular abscess, before they left the hospital. Others have been operated on for appendicitis with abscess formation and had the appendix removed months or years following the first operation.

The removal of the appendix at a secondary operation is frequently very difficult because of the density of the surrounding adhesions. In the majority of instances it will be found much easier to remove it at the first operation and this should now be done rather than subject the patient to a prolonged and often serious second operation with the resulting time loss and unnecessary risk thereby enforced.

Dr. Archibald MacLaren[3] of St. Paul, in a paper on rectal drainage for the relief of certain advanced septic conditions in the lower pelvis complicating suppurative appendicitis, states that, since employing the method above advocated, he has noted the indications for rectal drainage in his cases to be reduced just 50 per cent.

2. Ross, G. G.: Subphrenic Abscess the Result of Acute Inflammation of the Vermiform Appendix, THE JOURNAL A.M.A., Aug. 12, 1911, p. 526.

3. MacLaren, Archibald: The Proper Treatment of Intraperitoneal Abscess in the Lower Abdomen, with Special Reference to Rectal Drainage in Pelvic Abscess, THE JOURNAL A. M. A., June 25, 1910, p. 2105.

Dr. J. Rilus Eastman[4] of Indianapolis, reports that his results have been much better since he has been removing the appendix in every case of this character; he most heartily commends the method.

In brief, the technic of the procedure recommended is the following: The incision, regardless of the location of the abscess, is made through the right rectus muscle, and the peritoneal cavity is freely opened. A small gauze pack is tucked into the upper angle of the wound and so adjusted as to prevent any extravasation of pus toward the median line. A gauze pack is adjusted also from the upper angle of the wound to the lower pelvis to prevent any extravasation toward the left. The abscess cavity is then freely opened with the fingers unless opened by the peritoneal incision, and the pus is rapidly mopped up with gauze sponges. The appendix is then exposed and removed. All adhesions separating the abscess cavity from the lower pelvis are now freely separated and the pus or seropus which is usually found in the lower peritoneal pouch is rapidly removed by sponges. A large split rubber tube, carrying a loose-fitting wick of iodoform gauze, is inserted through the lower angle of the wound to the bottom of the rectovesical pouch, care being taken that it does not, at the lower end, impinge on an intestinal coil. The protecting gauze is removed and the wound closed down to the tube with interrupted through-and-through sutures of silkworm-gut. In these cases a continuous-layer suture is greatly inferior to a through-and-through suture because of the danger of infection of the wound. As drainage of the peritoneal cavity can be maintained only for a relatively short time, this drainage must, in cases of this character, be very free, and the use of a large tube, placed as above described, secures this result.

The patient is then placed in bed, the head of which is elevated at least 30 inches from the floor. The patient is turned on his right side inclining toward the prone position, and a special nurse, instructed to see that the right-side posture is maintained for at least twenty-four hours, should be placed in charge. Proctoclysis is immediately begun and continued as long as needed in each case. Water is allowed at once, but in small quantities. Morphin is given whenever necessary to control pain. No nourishment is given for at least forty-eight hours and then it is given sparingly.

The cases which furnish the material for the conclusions reached in this article represent an unbroken series of similar treatments, as I have removed the appendix in every case of appendicitis with localized abscess, since the first one of the series was removed.

Many of these patients were operated on in their homes, frequently under most unfavorable conditions, and I feel that the series furnishes a severe test of the method.

In considering the mortality of this procedure, which as previously remarked, has been, in this series, 1.2 per cent., we not only must compare with the primary mortality of similar cases treated by drainage alone, but also must add to this latter mortality that attending those cases in which because of recurrence of disease, a second or a third operation becomes necessary. In my experience, not only has the mortality been greatly reduced by this plan of treatment, but also convalescence has been much shortened.

4. Eastman, J. Rilus: Impressions of Appendicitis and Sigmoidal Diverticulitis, Indianapolis Med. Jour., 1912, xv, 49.

The procedure is not advocated for the operator with little experience in abdominal surgery; but it may be added, no man of little experience should attempt to operate on any acute suppurative process within the abdomen. The technic was, I freely admit, adopted as a routine measure with some misgiving at first, and I rather expected to be forced to discontinue it, at least in certain instances, but as experience with it increased and it was noted that adhesions in these cases could be freely separated, not only with impunity, but also under proper precautions, even with benefit, my faith in it has been strengthened and I no longer hesitate to offer it as a routine procedure to the competent surgeon, for I firmly believe that by its employment convalescence will be shortened, postoperative sequelae will occur less frequently and mortality be reduced.

A CLINICAL STUDY OF ASTHMA

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The purpose of this article is not to discuss asthma as a disease, but rather to treat it as a symptom, and to recite the results obtained in a series of cases based on this assumption.

Before proceeding to the case histories I would call attention to a review of the condition commonly called asthma and the classical theories generally accepted as to its cause.

Asthma is often designated as gastric, renal, nasal, bronchial, cardiac, etc. Two general classifications bring it down to cardiac and bronchial, though Osler says that, as a matter of fact, true asthma is rarely found in diseases of the heart; that while a dyspnea is present, it is not an asthmatic paroxysm, because it is an inspiratory instead of an expiratory interference.

Of special pathology there is practically none, such changes as are found being secondary, in the form of emphysema, bronchitis or dilatation of the right heart. The occurrence of asthma is paroxysmal and painless, stamping it at once a neurosis. It is characterized by spasm of the bronchi and the respiratory muscles, including also the diaphragm, and is followed by a vasomotor disturbance in the mucous membrane of the bronchi, large and small.

Briefly, the theories as to the cause of asthma, are as follows:

1. Spasm of the circular muscular fibers of the bronchial wall.

2. Hyperemia of the mucous membrane of the bronchioles.

3. Spasm of the diaphragm.

The first two are the most tenable, and, indeed, the results of investigations are causing, and justly, the first to be classified as the cause, with the second and third secondary in effect to the first, that is, resulting from the spasm of the bronchioles.

After disposing of the second and third theory, we then ask what produces the condition named in the first theory? The nearest answer yet offered is that it is a reflex from an irritation produced elsewhere in the body. As proof of this theory I wish to offer the following case histories compiled during the past two or three years, in the hope that more attention may be given to thorough physical examination of asthmatic sufferers. The cases cited are selected from different series of causes and are illustrative of what may cause an asthmatic paroxysm:

REPORT OF CASES

CASE 1.—Mrs. F., an American, aged 32, has had the ordinary diseases of childhood. When 8 years of age she fell from a picket fence, alighting in a sitting posture. She was confined to bed for several days. The first menstruation, which was very painful, was at the age of 14. At this time she experienced the first asthmatic attack. Attacks of asthma came with every subsequent menstruation, each menstruation being painful. At the age of 26 she married and had no asthma for the subsequent six years, during which time she bore three children. The youngest child is now nearly 3, and for the past year the asthma has been increasing with each menstruation.

Examination.—Asthma here pointed so directly to a uterine disorder that a vaginal examination was made, and a condition found of retroversion with adhesions, probably due to the fall. The diagnosis of asthma reflex from uterine disorder was made.

Treatment.—A ventral fixation and ovariotomy were done April, 1912. Since the operation the patient has gained 15 to 20 pounds, with not a trace of asthma to date — May, 1913. The menstrual flow has been normal ever since. There have been four similar cases in this series, with three full recoveries. One showed no results.

Case 2 is of course rare but demonstrates the possibilities, and it is not by any means isolated in occurrence.

CASE 2.—Mr. G., aged 30, is married. The history is negative except that the right testicle had not descended. At the age of 13 asthma developed and increased in severity until the patient was 18 years of age, when the attacks became terrific. The patient became a masturbator and reports that a severe attack followed each indulgence. At the time of the attack the patient complained of severe pain in the right inguinal region, which pain subsided in forty-eight to seventy-two hours and the asthma ceased shortly after. He was operated on for appendicitis five years ago. It was recommended that he have an exploratory abdominal section for investigation concerning the testicle which had not descended. The patient refused to act on the recommendation and returned to his home in the East. Two months later he wrote that his family physician had taken him to a surgeon because of excessive pain in the right inguinal region. An encysted testicle was removed. I have since heard from him twice and he is perfectly free from asthma. The operation was performed two years ago.

Case 3 illustrates a class that is probably the most common; at the same time it is the most easily diagnosed and responds readily to treatment.

CASE 3.—Mr. W., aged 65, has had asthma for fifteen years. His occupation is that of a broker. He is sedentary in his habits and has been a heavy eater and drinker for many years. There has been a great deal of constipation during the past twenty years; also indigestion with formation of gas and consequent pain. The amount of food was lessened. Drinking has been eliminated for the past five years. The patient is relieved of attacks of asthma when fasting or resting in bed for a few days.

Examination.—The blood-pressure was 180. The urine was heavily loaded with indican and there was some albumin. Coarse râles were heard in the lungs and emphysema was present. The heart was irregular in action with a pulse-rate of 84. The abdomen was very protuberant. There was gastroptosis, descending 2 inches below the umbilicus. Enteroptosis was also marked. The abdomen was excessively tympanitic. Inguinal hernia has existed since the age of 35. A diagnosis of reflex asthma from abdominal ptosis and intestinal putrefaction was made.

Treatment.—An abdominal support was fitted very snugly supporting the walls firmly. The diet was regulated, proteids and coffee being eliminated almost entirely. Intestinal antiseptics were given and bowel movements were aided. Tincture of iodin in milk for high blood-pressure with rest in bed was prescribed. The result, ten days later, was a much lessened amount of indican, while the blood-pressure was 150. The bowels moved daily and the patient said that breathing had not been so well or easily accomplished in ten years. The asthma had practically disappeared. Dyspnea had been almost continuous. One year has since elapsed (June, 1913), and the patient is still free from asthma unless dietetic errors occur, when asthma again presents itself.

Of this last class there have been fourteen cases. All have responded to treatment but two. One patient neglected to live up to the requirements and was eliminated from consideration. The other case has not been cleared up as yet, and probably will not be on this classification. Seven patients belonging to this class of cases have recovered entirely from their asthma. The remaining five are all much relieved. In all cases a return to the old methods of living, and the leaving off of abdominal support, precipitates an asthmatic attack. The intestinal antisepsis is no doubt the chief factor in the relief afforded; the belt, while essential, plays a secondary part.

As this article is being written a colleague reports an acute case.

CASE 4.—A man aged 45, awakened at 2 a. m. with a first attack of asthma. A canned-fish supper had been partaken of on the preceding evening. The attack was terminated not by morphin but by gastric lavage and a high enema.

The next case illustrates a large class and requires careful examination.

CASE 5.—Miss S., aged 19, has had asthma since 7 years of age, following an attack of bronchitis. The paroxysms are almost continuous.

Examination.—The patient has adenoids and hypertrophied tonsils, also septum deviation. She is very anemic. The hemoglobin is 60. There is chronic constipation. The urine is highly colored and heavily loaded with indican.

Treatment.—The adenoids and tonsils were removed. The septum deviation was corrected and the bowels were regulated through the diet. There was marked improvement in the asthmatic condition. The patient is subject yet to mild and brief attacks, though she is gaining in weight. Eight months have passed since the operation. The regulation of the diet and bowels probably had more to do with this result than the operation, as the response was not marked until the intestinal condition was corrected.

Much stress has been laid on nasal disorders as a causative factor in asthma and it is true that this may account for some cases. We should go beyond this and try to determine what produces the nasal condition, unless a sharply defined anatomic malformation exists, causing pressure that only surgical interference can remove. Overlooking this point accounts for many failures to relieve the patient. A cure is effected in some cases in which nasal correction alone is secured, but in others the removal of nasal obstruction does not produce favorable results. So many of these sufferers show such very poor eliminative capacity that little can be expected from the mucous membrane of the nasal passages until the bowels, kidneys and skin are fully performing their functions.

The presence of adenoids in adults has caused asthma in seven patients. That is, seven responded to treatment after removal of adenoids, while many more than seven asthmatics who were the possessors of adenoids showed slight, if any, improvement after operation. The seven that did respond, however, made it worth while. In any event, the adenoid required attention.

The next class of cases has been little studied.

CASE 7.—Miss B., aged 28, had a negative family history. Menstruation began at the age of 13. There was marked dysmenorrhea after the first six months. The attack always preceded the flow by three or four days and abated when the flow was established. A dilatation eight months ago, repeated three months later by the family physician, has resulted in disappearance of the asthma. Menstruation is now practically normal.

Out of four other patients with similar histories only one has responded. Improvement in two out of five, however, made the result worth the effort. The question may be asked: Is the uterus, in patients in whom such treatment is unsuccessful, in reflex spasm from irritation of another center? I am not a gynecologist or a neurologist.

Reports are being made from time to time of successful results following the use of vaccines, and the manufacturers of biologic products are continually suggesting the use of vaccines in this affection, while much disappointment is being experienced as a result. Some cases, no doubt, have cleared up following the use of vaccine; not a vaccine used directly against asthma, but one that was indicated to meet another infection, the asthma, no doubt, being a reflex result.

As headache, backache and numerous other afflictions have proved to be but symptoms, I would suggest, reasoning from my own experience, that the consideration of asthma as a disease be dropped and the presence of asthma taken to be a symptom reflex. Instead of loading our patients with morphin and everything else in the U. S. P. in an effort to find a cure, we should take a little time between attacks and also during the paroxysm to study and examine these sufferers in a thorough and systematic manner and to obtain a full record of their histories from the date of their birth to the time they put themselves under our care. An inquiry into the menstrual history of female patients and into the condition of the alimentary tract in both sexes should be thorough. The urine examinations should have a complete record as to indican, urea, etc. There will be much disappointment and discouragement, but if the cause can be located once in ten times the result will be worth the time spent; and a record of the case well written and published will add one more link to the chain that will some day be almost complete as to possible causes, and we can at least tell our patients what produces the asthma, even though we cannot cure it. The treatment very often lies in preventing the attacks, hence is in the hands of the patients themselves and they need rigid instruction.

DIAGNOSIS OF WHOOPING-COUGH BY THE COMPLEMENT-DEVIATION TEST

PRELIMINARY NOTE *

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The purpose of this preliminary report is to record the fact that we have succeeded in making the diagnosis of whooping-cough in all stages—catarrhal, paroxysmal and convalescent—by means of the complement-deviation test.

We desire also to describe our technic as thus far developed, and to tabulate the results obtained. Several details of the work are reserved for future communication.

When Bordet and Gengou[1] described the bacillus of whooping-cough in 1906, they used the complement-deviation test to control their bacteriologic findings. From this time on, it has been known that the blood of patients in the late stages of pertussis, during convalescence and for some time thereafter would give a positive test, showing definite deviation of complement. More recently it has been shown that in the later stages of atypical cases of pertussis, that is, paroxysmal cough without a whoop, it is possible to determine the specific pertussis character of the infection by means of this test.[2]

Several observers have denied the possibility of making a diagnosis of pertussis, even during the height of a typical attack or directly after convalescence by means of the complement-deviation test. Working in the Royal Serological Institute of Vienna, Bächer and Menschikoff[3] report that in twenty-seven cases of pertussis, moderate and severe, in the height of the attack and in convalescence, attempts were made to obtain positive complement-deviation reactions, without success in a single case. Only after vaccines, prepared from pure cultures of the Bordet-Gengou bacillus were given, was the test ever positive.

Commenting on these and other similar findings, Bordet[4] himself says, "I repeat that the power (of fixing the complement) is *not* seen early. In general, it does not show itself markedly till toward the period of convalescence or cure."

Netter and Weil[5] have reached practically the same conclusion. They find that the test is constantly positive by the end of the second week of the paroxysmal stage. In the catarrhal stage they were unable to obtain a positive reaction. Of sixteen cases examined during the first week of the whoop, not one gave a positive reaction. They therefore conclude that the test has no diagnostic value in the early stages. This would appear to be the consensus of opinion at this time. It should be noted here that Manicatide[6] has recently announced that he has secured positive complement-deviation tests in a series of cases, using as antigen a so-called Z-bacillus isolated by him. Confirmation of this assertion is apparently lacking, as are also details as to period of attack in which the positive finds occurred.

Our own results lead us to the opinion that the complement-deviation test is of the very greatest value in the diagnosis of whooping-cough. With the method we have used, it has been possible to make a diagnosis of pertussis in the catarrhal stage (subsequently confirmed by the clinical history). Nine patients were admitted to the hospital just as the children were beginning to whoop; that is, in the first days of the paroxysmal stage. Our test was positive in all of these cases.

It will be recognized that the early diagnosis of such a scourge as whooping-cough, particularly when occurring in institutions in which children are segregated in large numbers, is a matter of great importance. Again, it is a matter of record that the success of vaccine therapy depends in large measure on the time of its

* From the laboratory of the Cincinnati Hospital, Dr. Paul G. Woolley, Director.

1. Bordet and Gengou: Ann. de l'Inst. Pasteur, 1906, xx, 731.
2. Bordet and Gengou: Centralbl. f. Bakteriol., Abt. 1, Orig., 1911, lviii, 573. Bordet and Brunard: Bull. Acad. roy. de méd. de Belge, 1910, xxiv, 320. Delcourt: Presse méd. belge, 1912, lxiv, 19.
3. Bächer and Menschikoff: Centralbl. f. Bakteriol., Abt. 1, Orig., 1912, lxi, 218.
4. Bordet: Centralbl. f. Bakteriol., Abt. 1, Orig., 1912, lxvi, 276.
5. Netter and Weil: Compt. rend., Soc. de Biol., 1913, lxxiv, 236.
6. Manicatide: Ztschr. f. Kinderheilk., 1913, vii, 226.

application. The earlier the vaccine is given, the better the results. If it be possible to diagnosticate whooping-cough in the catarrhal stage surely and definitely, its rapid cure seems assured.

Our technic for the test has been as follows: A small amount of blood was taken from the patient's ear, finger or toe in small test-tubes or the Wright capillary tubes.

This was kept at room temperature or placed in the incubator until coagulation had taken place. Serum was then separated more completely from the clot in the centrifuge. So far in our tests only the fresh active serum has been used. Two drops of the serum were used in each test.

Hemolytic System: The Noguchi system was used, because of its extreme delicacy, and because of the small amounts of material, especially serum, required.

Antigen: This is the most important factor in the test. The Bordet-Gengou bacillus was obtained in pure culture from the laboratories of Parke, Davis & Co. Most of our work was carried on with this culture. Cultures were also obtained from H. K. Mulford Company and from Dr. F. B. Mallory of Boston. The latter culture came from a strain grown at Theobald Smith's laboratory.

Subcultures were made on Bordet's medium, ascitic fluid agar and broth serum.

The antigen was made from seventy-two-hour growths in ascitic fluid agar in the following manner:

The colonies, which are very tenacious, were washed off the agar with sterile salt water. An emulsion was made, and the bacteria again washed in salt water. From this a standard suspension was made and 0.1 and 0.2 c.c. of this used in the test. Throughout the tests, live bacteria were used.

Controls: In each test known normal and known positive controls were used. In each series of tests the hemolytic system was tried out in the usual manner, using a water-bath at 37 C. for incubation. After primary incubation for half an hour, the amount of amboceptor indicated by the preliminary test was added to our final test-tubes, and the tubes again incubated in the water-bath. Final readings were taken within the following hour.

In every instance, independent readings were taken by each of us, always without previous knowledge of the clinical history of the given case.

Our results are given in the accompanying table.

RESULTS OF COMPLEMENT-DEVIATION TESTS FOR WHOOPING-COUGH

	No.	Positive	Negative	Percentage
Cases whooping.....	18	18	0	100
Normals	8	0	8	100
Early Cases (catarrhal stage)	3	2	1	66.6
Not whooping, but course otherwise typical.....	1	1	0	100

While this is to be considered as a preliminary report, purely, we wish to call attention to the following details:

1. The antigen must be fresh. In each instance we have used seventy-two-hour growths on ascitic fluid agar.

2. We have invariably used active antigen.

3. We have always used fresh active serum.

4. Our material has been drawn for the most part from cases in our own wards at the Cincinnati Hospital. This will explain why we have not had more cases in the catarrhal stage, as the children are usually not admitted before the onset of the paroxysmal stage. In this connection, however, it is of interest to note that nine of our positive cases were in the first week of the whoop, and three early in the second week, as shown by our carefully recorded clinical histories. Every case examined in the paroxysmal stage has given a positive reaction.

In no case have we had a positive reaction when the patient has not had either a pertussis infection or a history of pertussis within four years.

The one case, in the catarrhal stage, which did not give a positive reaction, was tested at the very beginning of the cough. The other two cases in the catarrhal stage, both giving positive reactions, occurred in the private practice of one of us. Both of these children subsequently developed typical attacks with pronounced whoop.

We are now beginning the study of early cases (catarrhal stage), using as material cases with cough as seen in the children's clinic of the medical department of the University of Cincinnati. In this way we hope to be able to report on a larger series of early cases in a subsequent communication.

It is a pleasure to express our thanks to Dr. W. B. Wherry, professor of bacteriology, University of Cincinnati, for many helpful criticisms and suggestions.

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THE GENERAL ACTION OF QUININ IN THE TREATMENT OF AMEBIC DYSENTERY

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Of the many drugs advocated in recent years for the treatment of amebic dysentery, undoubtedly ipecac and quinin have been by far the most popular and successful.

Vedder, in some interesting and instructive experiments, carried out in Manila in 1910 and 1911, proved conclusively that both of these drugs have a powerful amebicidal action on water amebas *in vitro;* hence it is logical to conclude that their use in the treatment of amebic dysentery is based on a rational principle. In these experiments Vedder found that emetin (alkaloid) killed amebas in dilutions of 1:100,000, and that the fluidextract of ipecac acted similarly in dilutions of from 1:10,000 to 1:50,000, according to the preparation employed. Subsequently he ascertained that the amebicidal action of ipecac varied directly with the alkaloidal content present in the preparation utilized. In powdered ipecac—the preparation usually given in the treatment of dysentery—the amount of alkaloid present ranges from 0.33 per cent. to 2.5 per cent. The standard of the Pharmacopeia is 1.75 per cent. A probable reason for the discordant results obtained by the various physicians in the treatment of dysentery with ipecac is thus discovered. Quinin sulphate killed amebas in dilutions of 1:20,000, and silver nitrate in dilutions of 1:300,000.

Unfortunately, the pathogenic entamebas cannot at the present time be grown on artificial culture mediums, consequently their lethal factor to the above-mentioned drugs cannot be accurately determined, and even if such

were the case it is fully appreciated that identical results would not necessarily occur *in vivo*. Until we are able to conduct experiments along lines more closely resembling the conditions found in disease, however, it is believed that the preceding experiments may be used as a guide in the treatment of dysentery.

After reading Vedder's paper, Rogers tried emetin hydrochlorid hypodermatically, in the treatment of amebic dysentery, and reported six or seven cases in which prompt and decisive results were obtained. Since his article appeared, many authors have corroborated Rogers' work.

In a somewhat extensive experience with amebic dysentery during the past twelve years, I have employed many drugs in its treatment; and, on clinical grounds, came to the conclusion that in a majority of cases ipecac was by far the most successful. As is the case with many other remedies, I also ascertained that the earlier ipecac was employed, the more promptly and permanently did the disease respond to treatment.

During my last tour in the Philippines, ten out of twelve new cases treated with ipecac did not relapse during a period of from six to eighteen months that they were under observation. Nearly all of the patients treated by me in the United States have had two or more attacks, and in these chronic cases relapses are by no means infrequent. During the past year I have used emetin hydrochlorid in the treatment of eleven of these old cases of amebic dysentery. Only about one-half of these cases have responded promptly to treatment, but all of them have improved, and no doubt some of the others would have yielded to persistent medication. The average quantity of emetin administered has been 65 mg. (1 grain) twice a day. In some cases as much as 130 mg. (2 grains) have been administered at a dose, but few patients can take such large amounts without considerable depression following.

The incomplete success obtained in some of these cases and my inability to secure emetin at all times induced me to try the general action of quinin. The local action of quinin by enema I had tried many times with only indifferent results. From the action of emetin given hypodermatically in dysentery, and from the promptness with which I have seen draining amebic abscesses of the liver heal after a course of ipecac by mouth, I concluded that even in amebiasis of the colon it was the general and not the local action of the emetin that cured dysentery, and hence it would be entirely logical to expect that the general action of quinin in the same disease would be more important than its local action. This view is further fortified by the fact that silver nitrate, which is three times as potent an amebicide as emetin and fifteen times as potent as quinin, has not been so valuable an agent as either of the other remedies in combating this disease. When given by enema, some of the silver is, of course, precipitated as the albuminate and the chlorid, but even after making due allowance for the loss sustained in this way, its action cannot be compared to that of emetin or ipecac. I am of the opinion that whatever benefit has followed the use of quinin enemas in dysentery has been due to the mechanical cleansing of the colon, and to the amount of the drug absorbed. I recall two patients successfully treated with quinin irrigations who complained of symptoms of cinchonism after nearly every treatment. The amebas in the lumen of the intestine should be promptly killed by an irrigation; but the harmful ones, the ones buried in the abscess walls and in the burrows radiating from them are probably affected only by that portion of the drug absorbed, which, in the majority of cases, must be only a fraction of the amount dissolved in the enema.

The second point that induced me to try the general action of quinin in the treatment of dysentery is that if emetin is amebicidal in dilutions of 1:100,000, and quinin in dilutions of 1:20,000, the latter drug should be just as efficient or even more so, since it can be given in from five to ten times as large a dose as the former alkaloid. A third point is that cases that resist ipecac may develop an emetin-fast strain of parasites that might succumb to quinin. The converse of this should also be true.

With the preceding ideas in mind, I began employing quinin sulphate in doses from 1.5 gm. (22 grains) to 2 gm. (30 grains) per day by mouth. In some of the cases I gave 0.6 gm. (10 grains) in capsule three times a day, usually for a period of six days. The treatment was then discontinued for one week and subsequently repeated. If a patient complained of annoying tinnitus aurium, he was given 0.6 gm. with the evening meal and 1 gm. on retiring, with equally satisfactory results and with a minimum of discomfort from the action of the drug. I have now treated ten chronic cases with most encouraging results. In all of these the amebas have disappeared from the stools within a few days, and the symptoms have improved. In several of the cases, one or more relapses occurred, and in one case, while the parasites disappeared temporarily, they would invariably return, usually as encysted forms. The last case cited resisted ipecac by mouth, emetin hypodermatically, ipecac, quinin and silver irrigations, bismuth and milk, and rest and special diet for a period of six months, and the patient was finally discharged uncured. I have no doubt that some of the patients now apparently cured will subsequently relapse. But this result occurs under any method of treatment with any one who sees many cases. I regret that I have not had an opportunity to try the general action of quinin in acute and early cases, as one would naturally expect better results before extensive or chronic ulceration occurred. On the other hand, I realize that only experience can determine this point.

While I have not resorted to the hypodermatic administration of quinin in the treatment of dysentery, I would not hesitate to do so if the patient failed to retain or absorb the drug, when given by mouth. Both quinin and emetin are irritating when given hypodermatically, but emetin appears to be less so; hence, under the above circumstances I would prefer to employ the latter alkaloid.

CONCLUSIONS

1. In the early stages of entamebic dysentery, ipecac, or preferably its alkaloid, emetin, given hypodermatically, would appear to have a specific action on the disease.

2. In chronic cases, ipecac is a valuable remedy and will cure many patients, but not with the promptness and certainty that it does in the acute phases of the disease.

3. Quinin sulphate by mouth in doses of 2 gm. per day would appear to be as efficient as ipecac in the treatment of entamebic dysentery.

4. Quinin is always available, is much cheaper than emetin, and, in most cases, can be given with less discomfort to the patient than ipecac or its active principle.

Letterman General Hospital.

PSEUDOPANCREATIC CYSTS

WITH A REPORT OF FOUR CASES

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In discussing pseudopancreatic cysts one is tempted to take issue with the term as applied to the existing pathologic condition. The condition is essentially a collection of fluid in the lesser peritoneal cavity, and not a true cyst, and only resembles a pancreatic cyst in that the fluid sometimes contains the pancreatic ferments. The old term of traumatic cyst of the pancreas, as first used by Küklenkampff and Senn, is of course erroneous, for it is in no sense a true cyst, nor is it directly connected with the pancreas. A truer and more descriptive term would be, "an accumulation of fluid in the lesser peritoneal cavity as a result of trauma to the pancreas."

Küklenkampff's case, reported in 1882, is the first case observed and reported in the literature, and this was considered a true cyst of the pancreas. This was followed by Senn's classic paper, with a report of a case, which appeared in 1885. Senn recognized that, because of its slight protection and its rather exposed location when the stomach and colon are empty, the pancreas is susceptible to injury. He was, however, unable to find in the literature any allusion to stricture of the duct as a result of trauma. He stated that "the clinical history of several rapidly growing cysts tends to prove that obstruction of the duct occurred in this manner."

A careful survey of the history of Senn's case convinces one that he was dealing with a collection of fluid in the lesser peritoneal sac and not a true cyst. He assumed that the condition was a retention cyst caused by a trauma to the duct, with subsequent fibrosis and occlusion. He attempted to produce the condition by animal experimentation and failed. He explained the blood in the fluid in several possible ways. Fenger, in 1887, and Steele, in 1889, reported cases as true cysts of the pancreas following injury, both of which were probably pseudocysts.

Jordan Lloyd was probably the first to recognize and describe the true pathology of this condition. He reported two cases, one of which was fatal, and was subjected to necropsy. The other patient was operated on and the exact pathologic anatomy noted. In both of his cases the fluid contained pancreatic ferments.

In 1895 Leith collected seventeen cases from the literature, including the ones reported by Küklenkampff, Senn, Kuester, Fenger, Steele and Richardson. Many of these seventeen cases were considered true cysts, but Leith believed them to be pseudocysts.

A brief review of the anatomy of the lesser peritoneal cavity shows that it varies in size within rather wide limits. It lies below and behind the stomach, the gastrohepatic omentum and the anterior layer of the great omentum. It is directly in front of the pancreas, and the peritoneum is closely adherent to this organ at this point, not being separated from it by any considerable layer of fat, even in fleshy people. This is to be noted as an essential factor in a consideration of the pathogenesis of pseudocysts following trauma.

The lower boundary of the sac is formed by the upper layer of the transverse mesocolon. Laterally, it extends from the hepatic to the splenic flexures of the colon. The right limit is formed by the folding of the peritoneum to form the foramen of Winslow. The left limit is the hilum of the spleen. The upper limit is formed by the diaphragm and the liver. The spigelian lobe of the liver is the only part of this organ that lies free in the cavity. The colon lies below the cavity.

Lloyd found when the cavity was distended with plaster of Paris that the greater bulk was found deposited in the hollow to the left of the spine, which would tend to explain the prominence of the tumor at this point when the sac is distended with fluid. In considering trauma as an etiologic factor in producing a distention of this lesser sac, one must recognize that an inflammation from any cause which involves this portion of the peritoneum is capable of inducing the same effect. Trauma to the abdomen, particularly crushing injuries across the upper part, can readily impinge the pancreas against the spine and lacerate it extensively, for if the stomach and colon are empty, this organ is not well protected.

It is now conceded that such an injury will so tear the overlying peritoneum and crush the pancreas beneath it so as to allow an escape of pancreatic secretion and blood into the lesser peritoneal sac, producing an inflammation which results in a plastic exudate capable of closing the foramen of Winslow. With a continuation of this process a distention of the cavity is inevitable. It has been thought that fluid might collect between the peritoneum and pancreas following injury, but this does not seem probable. A severe trauma was inflicted on the upper abdomen in each of the four cases here reported.

Fat necrosis has been observed in many of the reported cases, which resulted from an escape of pancreatic secretion through the foramen of Winslow before it closed, or from a flow along the lymphatics. Two of the cases here reported showed fat necrosis.

The fluid found in the reported cases has shown pancreatic ferments in a considerable number of them, the fat-splitting and sugar-reducing ferments being the ones usually found. The amount of ferment found is dependent on the extent of laceration of the pancreatic tissue, and relatively on the quantity of fluid exudate within the sac, causing a dilution of the escaping pancreatic secretion. The fluid from two of our cases showed pancreatic ferments.

In considering the diagnosis of a collection of fluid in the lesser peritoneal sac due to trauma, one is impressed with the similarity in the nature of the injury that occurred in a majority of the reported cases. While it is recognized that the pancreas is a deep-seated organ and fairly well surrounded by protecting tissues, yet it rests directly on the spine, and if the stomach and colon are empty and the anterior abdominal wall thin, as it is in children, then the conditions favor an injury to the pancreas from any blow or crushing force which will thrust the gland against the firm vertebra.

Three of our four patients were children, and all of them sustained their injury by being run over by a wagon. The fourth was an adult, who had received a sudden sharp blow in the upper abdomen. He was a porter on a sleeping-car and was thrown violently against a seat in a railroad wreck. The history is, therefore, of great value in arriving at a diagnosis.

The subsequent clinical course in all these four cases is strikingly analogous. Each case gave a history of rather severe abdominal pain, with nausea and vomiting immediately following the accident. None of the cases

were seen on the first day, so the amount of shock cannot be estimated. Two of the cases were seen on the second day, and both had a temperature from 100 to 101 F., with a slight acceleration of pulse-rate. This continued until operation. There was some tenderness and slight muscular rigidity over the epigastrium. These symptoms continued until the appearance of the tumor, which was first observed in one case ten days after injury, and in the other twenty-three days after the accident. It is probable that in the latter case the tumor had existed a number of days before being discovered. In the other two cases it was first noticed in twelve days and three weeks, respectively, after the trauma. In practically all the recorded cases it is noted that the tumor made its appearance between ten days and four weeks subsequent to the trauma. It is our conviction that a mass can be made out in all cases in eight or ten days, if carefully searched for. The three of our four cases which occurred in children presented a smooth globular mass just to the left of and above the umbilicus. This mass protruded from beneath the left costal arch, and was firm in consistency, giving a sense of fluctuation.

Distention of the stomach and colon with gas demonstrated the mass between these two organs. There seemed to be slight movement with respiration.

The fourth patient was a colored porter, and he had received his injury about three months before coming to the Post-Graduate Hospital. He gave the history of having first noticed the "swelling" about three weeks after his accident. The tumor mass was larger, firmer and more fixed than the other three cases, and occupied the entire epigastrium, being a little more prominent to the right of the median line. When the stomach was distended with gas it was found lying over and below the most prominent part of the mass. It seemed fixed to the anterior abdominal wall, between the umbilicus and the right costal arch. When the lesser peritoneal sac becomes distended with fluid it may approach the anterior abdominal wall between the stomach and colon, which is the usual location, or below the colon, or above the stomach, through the gastrohepatic omentum. In three of our cases the mass was found between the stomach and colon, and in the fourth above the stomach.

In each of the four cases there was a moderated leukocytosis with a slight increase in the polymorphonuclear cells.

It is unnecessary to add that an exploratory needle was not used in any of the cases.

In the first two cases seen a positive diagnosis was not made, one of them being the case of the adult, which had existed for three months; the second two seemed so typical that we ventured a rather positive statement as to the condition.

In taking account of the evidence which makes for a diagnosis, a consideration of the manner in which the injury to the upper abdomen was inflicted is all-important. Crushing injuries, such as a wheel passing over the abdomen of a child, are probably the most frequent cause.

The appearance of a cystic tumor ten or twelve days after such an injury, protruding to the left and above the umbilicus, lying between the colon and the stomach, and accompanied by a slight amount of pain, tenderness and elevation of temperature, make the diagnosis of a collection of fluid in the lesser peritoneal sac most probable.

The four cases here recorded were treated by incision and drainage. In the first case, the adult with the history of three months' duration, in which the cystic mass appeared above the stomach, the sac was found adherent to the anterior abdominal wall, and was opened without entering the general peritoneal cavity. No fat necrosis was observed, but the fluid was seropurulent, and contained pancreatic ferments. It was not blood-tinged.

In the other three cases there was a protrusion between the stomach and the colon, and the free peritoneal cavity was first walled off with gauze and the sac opened and drained. In two of these cases the fluid was blood-stained, and both showed a moderate amount of fat necrosis. There was no serious amount of excoriation of the skin in any of the cases, and the sinuses closed rather rapidly and without any unusual incident. All four patients made a complete recovery.

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CHRONIC RETENTION OF THE URINE

TWENTY-EIGHT YEARS OF CATHETERIZATION *

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Retention of urine in the male, due to enlarged prostate, requiring years of catheterization, is a rather common occurrence; but there are few instances in which actual and continuous catheter life has extended over more than ten or fifteen years. Moreover, after a careful search of the literature, I was unable to find a single reference to any condition of the genito-urinary apparatus of the female demanding daily use of the catheter, especially for the unparalleled period of twenty-eight years. It seemed, therefore, that the following case might be of interest:

Mrs. P., married, aged 42, a housewife, of fair complexion, excellent physique and a negative family history, entered the Peoples Hospital on account of the distressing condition of having to draw the urine from four to five times daily. For the past twenty-eight years she had never, to her knowledge, passed a drop of water, except through a catheter. There was no history of any other previous illness of any consequence, and no injury to any part of the body, especially the spinal column. The reflexes were normal. Syphilis was easily excluded. Menstruation had always been regular and free from pain. She had one child who is well. This labor was normal, except for the necessity of catheterization, as before. I was not able to ascertain why the bladder condition was not investigated after recovery from childbirth.

At the age of 14, having previously been perfectly well, she was seized with severe pain in the hypogastric region, which grew rapidly worse, with inability to void urine, though the desire to urinate was frequent and attended with great distress. All the ordinary measures known to be helpful on such occasions were tried without benefit. A physician was then called who relieved the retention, and sent the patient to a hospital, where treatment covering several weeks was carried out. She was not again able to urinate, however, and as the acuteness of the attack subsided, catheterization was still continued. No conclusion as to the cause of illness was arrived at. It is unnecessary to enumerate all the measures employed, from time to time, to relieve the condition. All were alike disappointing. At length, though greatly discouraged, the patient resolved to make one more effort, and came to the hospital for investigation.

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* Read before the Syracuse Academy of Medicine, Feb. 3, 1914.

Physical examination revealed essentially a normal person, except for the presence of urinary retention. The cystoscope gave no particular information as to the cause of the retention, but ruled out the presence of stone, tumor or lesion of the kidneys or ureters. There seemed to be a well-defined spasm of the internal meatus. The other pelvic organs were practically normal. The urine showed a mild chronic cystitis. The capacity of the bladder was about 3 ounces. Residual urine, if present, could not be detected, since the bladder was emptied only by catheterization. The natural desire to micturate had for years been replaced by severe suprapubic pain, and the peculiar sensation attending urination had long since disappeared. It was decided, therefore, to give the bladder rest. Meanwhile the patient's general condition was carefully studied with a view to correcting any existing neurosis. This was not followed by any perceptible change.

After the usual preparation, a suprapubic cystotomy was done, and the bladder drained for four weeks, the tube being removed in ten days. The internal meatus was found small and tense, and lacked the usual resiliency. This was no doubt one of the factors in the cause of retention, the detrusor muscle being unable to overcome the resistance. The bladder wall was considerably thickened, doubtless from fruitless efforts on the part of the bladder to evacuate its contents. Both ureteral orifices were normal in appearance. Both kidneys were functionating. Graduated steel sounds were passed into the bladder until the meatus accepted a 34 French.

After the suprapubic drain was removed, a permanent catheter was ingeniously tied in, and occasional doses of hexamethylenamin given, with free ingestion of water. The suprapubic drainage rapidly subsided, until eventually all the urine came through the catheter. This then was allowed to go on for a week, when the catheter was clamped off, allowing the urine to accumulate in the bladder for an hour, at which time the clamp was removed and the bladder emptied. At the end of another week, the patient was able to go two hours between evacuations. The time was soon lengthened to three hours, then four and five, until finally the bladder could retain 12 ounces of urine without distress. During this time, however, a complete change was taking place in the physiologic function of the bladder. Instead of the original unbearable hypogastric pain, there was the usual desire to urinate, not before experienced in twenty years. This desire was followed by a natural sense of relief after urination. The next step was to tie in a small catheter and clamp it, the object of which was to encourage the urine to escape around the catheter at stated times. It was soon noticed that this was taking place. The patient was now allowed to go to the water-closet every two or three hours and pass the urine, leaving the clamped catheter continually in place. This was done for a week. The result was very satisfactory to both the patient and myself. The urine was now in better condition, showing, of course, traces of chronic cystitis. The suprapubic incision being firmly healed, and the patient having quite well recovered from the operative procedure in general, the catheter was discontinued altogether, and has not been required since. Recovery was perfect.

Rest of the female bladder may be obtained by the use of a permanent catheter, and no doubt some will question the advisability of a suprapubic cystotomy in this case. But it was deemed necessary for two reasons. First, the long time over which the condition had existed called for diagnostic and therapeutic measures sufficiently radical to transcend in value those which had already been tried without result, and, secondly, assuming the probable presence of a neurosis, and considering the ill effects of habit and previous environment, it seemed best to follow a line of treatment not confined entirely to the urethra. The excellent results obtained go far to establish the wisdom of the course taken.

The cystoscope, in the diagnosis and treatment of disease of the bladder, is invaluable, and should always be given a trial unless there is some contra-indication to its use; but there are some unusual conditions of the bladder which one cannot differentiate without an exploratory incision. Suprapubic cystotomy is not usually a serious operation, and I believe that when it is done, a liberal incision is to be preferred. The skin and subcutaneous tissues are divided in the line of the sulcus, the recti muscles separated, and the space of Retzius traversed with as little traumatism as possible, and the bladder opened transversely, so that when the recti muscles are later brought together, the bladder incision, closed securely about the drainage-tube, is strongly reinforced. The tube is stitched only to the skin and should be removed early. Two drainage-tubes may sometimes be required. By means of the small diagnostic lamp, the head-mirror and the suction apparatus for frequent clearing of the cavity, the entire inner surface of the bladder may be explored easily. Complete recovery of the patient depends greatly on careful after-treatment, which permits no detail, however trivial, to be overlooked.

In closing, I wish to call attention to the original method of catheterization of the bladder after suprapubic cystotomy, more especially in those cases of retention in which, in the absence of any grave central lesion, the bladder mechanism, though intact, is held in abeyance, the patient having lost control over the act of micturition. Continuous catheterization is carried out by means of a full-sized catheter, until the primary incision is closed. The catheter is then clamped off, the bladder being relieved at short intervals by removing the clamp. These intervals are increased in length until the patient is able to retain the urine for four or five hours. A small catheter is then tied in, allowing the bladder to evacuate its contents, at stated times, around the catheter. The catheter is finally removed altogether, and the patient permitted to resume the normal act of urination.

803 East Genesee Street.

SYPHILITIC SORE THROAT DIAGNOSED AS DIPHTHERIA

SUBSEQUENT ERUPTION CONFUSED WITH SUPPOSED ANTITOXIC ERYTHEMA

ANDREW L. GLAZE, M.D., ATHENS, ALA.

The case detailed below is offered as nothing new. It is interesting, however, and will serve to help avoid one "diagnostic pitfall" of the many that wait for the unway.

Mrs. W. R. G., housewife, aged 23, living in the country, married six years ago, has two children, the eldest aged 5. The last child was born Nov. 1, 1913. At this time, apparently, the mother was in perfect health, but labor proved to be difficult, requiring instrumental interference. The child seemed normal. The puerperal period was uneventful till the ninth day after delivery; on this date the patient was seized with a severe sore throat which grew progressively worse.

In view of the fact that sporadic cases of diphtheria had prevailed in the community during the fall (although there were none in the immediate neighborhood at that time) and in the presence of a white membrane in the throat, the family physician administered diphtheria antitoxin, 5,000 units. The members of the household were given immunizing doses. At the second visit no improvement was noted, so another dose of 5,000 units was given. During this day an eruption, vesicular and papular, began to show on the face and around the edges of the hair. The family was calmed by the explanation that the eruption was expected as a result of the action of the antitoxin. The light doses received by them did not

produce similar symptoms. At a later date, local manifestations of the disease still proving rebellious, a third dose of 5,000 units was injected. Ten days later the eruption had become wide-spread, appearing all over the body. A different treatment was instituted, but the woman's people became dissatisfied, and the doctor in charge was dismissed.

Because of the fact that the patient's mother does not "believe in doctors," three weeks elapsed before another physician was called. At this time symptoms of an unusually malignant case of syphilis were in evidence. Complete anorexia, profound melancholia and weakness marked a serious condition. The characteristic eruption consisted of lesions as wide-spread and numerous as those which a severe case of discrete small-pox might exhibit. Iritis, ulcerative blepharitis and a mouth and throat as sore as that of the worst pellagra sufferer completed the patient's misery. (These symptoms are recited to emphasize what every case does not show so plainly, that the patient is injured more by a mistaken diagnosis than the doctor himself.) The Wassermann test was strongly positive. The woman's husband, confronted with the facts, admitted having become infected during his wife's pregnancy. He had been treated with salvarsan in a neighboring city.

CONCLUSIONS

Thorough physical examination when the physician was first called would have disclosed the fact that general glandular enlargement was present. This, combined with the throat described and with the elimination of the possibility of diphtheria by cultures, would have furnished food for thought.

The giving of antitoxin in the first place, it will be admitted, was justifiable. "When in doubt, give antitoxin" is a good motto.

The mistake in diagnosis, discovered later, should have been confessed to some member of the family, and the real nature of the malady divulged. This disease cannot be well treated without some measure of cooperation; in addition, the jeopardy in which one's reputation has been placed in instances of this sort can be minimized by thus making the best of a bad situation.

Death During Ether Anesthesia—Status Lymphaticus.—M. B., female, aged 3½, was admitted to the Montreal General Hospital on Nov. 12, 1913, for bilateral talipes valgus. She had been a premature infant (eighth month) and had been artificially fed. At the age of 18 months she had acute anterior poliomyelitis. In September, 1913, she underwent the operation of tonsillotomy under general anesthesia. At the time of her admission she appeared a well-nourished child and presented no signs of rickets. Examination of the heart and lungs was negative. The anterior and posterior cervical glands were palpable. There was no apparent enlargement of the spleen. The urine was normal. Nov. 15, 1913, she was given ether by the open method for a tendon-grafting operation. The course of the anesthesia was uneventful until the operation was nearly completed, that is, for about an hour. Breathing then became somewhat gasping in character, and within a minute ceased. Artificial respiration was immediately begun. Oxygen, camphor and strychnin were administered, but without success. Respiration was never reestablished. At the necropsy the following conditions were found: The thyroid gland was normal. The thymus gland was greatly enlarged especially on the left side. There was slight enlargement of the heart. The bronchial lymph-glands were hypertrophied and showed areas of caseation. A caseous gland was present in the posterior mediastinum in close contact with the branch of the left pulmonary vein from the lower lobe. The spleen was enlarged. Peyer's patches and the solitary follicles in the large intestine were enlarged and very prominent. There was hypertrophy of the mesenteric glands. The pancreas, liver, kidneys, adrenals and brain were normal.—W. B. HOWELL, M.D., Anesthetist to the Montreal General Hospital, Montreal, Canada.

ANKYLOSIS OF THE MANDIBLE

R. C. CREASY, M.D., WILKES-BARRE, PA.

W. C., aged 13 years and 7 months, undersized and underweight, came to me for the first time Aug. 9, 1913, with a limited motion of the mandible permitting of but ¼ inch separation of the incisors and no lateral motion. At the age of 4 years and 2 months, while swinging, he fell 8 feet and struck his chin on the hard wood floor. As the child suffered intense pain and was unable to move the mandible, a physician was summoned. Palliative treatment was instituted, and the child fed through a tube for a period of two months. No attempt was made to use the mandible, and it ankylosed in the position I found it. Roentgenoscopy disclosed the condition to be a previous fracture of the ramus, the line of fracture running into the joint, and a mass of callous substance filling the joint.

Ether was administered and the limit of motion was still the same, thus eliminating the spasmodic condition of the muscles as being one of the causal factors for the limited motion. Under force with the use of two oral mouth-gags, the degree of force applied being the same, thus avoiding any lateral dislocations, I succeeded in an increase of the limited motion to 1½ inches; this form of treatment was carried out three successive times at intervals of one week. During the time intervening I permitted the boy to make good use of the oral screw. The results obtained by this procedure have been excellent.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

TYPHOID VACCINE (See N. N. R., 1914, p. 259).
H. M. Alexander and Co., Marietta, Pa.

Typhoid Vaccine (Immunizing).—Prepared according to the method used in the U. S. Army Laboratory. The preparation is marketed in two styles of package: syringes and ampules, containing, respectively, 500 million, 1,000 million and 1,000 million killed typhoid bacilli. The injections are to be made at intervals of ten days.

B. B. CULTURE.—B. B. Culture is a pure culture of *Bacillus bulgaricus* said to be made from a desirable strain; marketed in bottles containing about 90 Cc. (3 fluidounces).

Actions and Uses.—B. B. Culture is intended for use in the treatment of intestinal indigestion and the various toxic and nervous effects arising therefrom; also for the enterocolitis of infants.

Dosage.—From 4 to 8 Cc. (from 1 to 2 fluidrams) three times a day in sweetened water before meals. For babies of any age 1 teaspoonful every three hours. The date of issue is stated on each bottle.

Manufactured by the B. B. Culture Laboratories, Yonkers, N. Y. No U. S. patent. U. S. trademark No. 90,535.

Brevity.—As a matter of fact we find that every really great writer tries to express his thoughts as purely, clearly, definitely and shortly as possible. Simplicity has always been held to be a mark of truth: it is also a mark of genius.—Schopenhauer.

Therapeutics

THE TUBERCULOSIS PROBLEM

(Continued from page 933)

PRETUBERCULOUS SYMPTOMS

The earlier we recognize the signs of probable or even possible tuberculosis, the better, as prevention is far easier than cure, though a cure is probable all through the first and second stages, and possible even in the third stage of the disease.

The conditions which predispose to this disease have already been enumerated. Besides correcting these conditions, we should use every means to build up the general system by tonics, outdoor life, change of climate, and by proper tepid or cold water sponging in the morning, which causes the skin so to react that colds are not readily acquired.

At a very early stage there may be no lung signs, and it may be impossible to determine whether or not the bronchial lymph-nodes are enlarged or diseased. There are loss of weight, more or less gastric disturbance, pallor, lassitude and vasomotor disturbances shown by cold hands and feet; or the latter may be intermittently very hot and dry. There is generally a history of progressive loss of weight, irregular chest pains, shallow breathing, dry cough, especially on deep inspiration, and, most important symptom of all, an afternoon or evening rise of temperature, not explainable by any tangible cause (although it must not be forgotten that occasionally such a temperature can be of nervous origin). Gastric indigestion, with loss of appetite, is often an early symptom of pulmonary tuberculosis. An anal fistula is generally secondary, and is not often primary to the lung lesion, and the discharge from it may contain tubercle bacilli, as well as staphylococci and streptococci. There may be some other chronic suppuration present, as a middle-ear catarrh. While anemia is generally an early symptom, in the early stages there may be an increase in the number of the red blood-corpuscles. Amenorrhea, even without anemia, in girls and women is generally an early symptom; but women can complete one, or even two pregnancies while tuberculous.

While we are studying every symptom, and the lung symptoms are so few, to ascertain whether the patient really is tuberculous, a personal history of much sickness, especially colds, enlarged glands, chronic joint and tendon swellings or recurrent diarrheas, even if there has been no actual pulmonary consumption in the immediate family, renders the tendency, and hence probability of tuberculous infection, much greater.

In making the physical examination it should be remembered that it has long been decided that the flat, broad chest, contrary to previous belief, is less likely to be tuberculous than the rounded, barrel-shaped chest. Also, the chest circumference in the nipple line should measure anatomically half the height of the person. The expansion, unless the patient is abdominally obese, should be from 3 to 4 inches; 2½ inches is too small an expansion for a young adult. The inspection of the chest may show a lagging of one side during expansion, which may, however, be most noticeable with the fingertips placed under the clavicles. This sign is very suggestive. The typical impaired percussion-note, imperfect breeziness of the inspiratory murmur, lessened depth, slight jerky inspiration, slightly prolonged expiration, slightly increased vocal resonance and localized râles, either dry or moist, with increased muscle resistance over a diseased area, with pleuritic pains in the upper part of the chest or between the shoulder-blades, are all too well understood to require elaboration. Very suggestive is the axillary, dripping perspiration during examination. Also suggestive is the little dry cough during the required increased inspiratory effort. This dry cough, hardly noticed by the patient, has probably been observed for weeks, if not longer, by the patient's family.

A study of the temperature of the suspected person is important; the temperature should be taken every three hours during the day for several days, or at least at 8 o'clock in the morning, at 4 in the afternoon, and at 8 in the evening, if not more frequently. A recurrent rise of temperature in the afternoon or evening, without any assignable cause, is almost pathognomonic of a latent tuberculosis becoming active. Some patients who show no temperature at rest will have quite a rise of temperature on the least exercise. Temperatures taken under the tongue are not so accurate as when properly taken in the axilla. Many a patient whose temperature is normal by the mouth will be found to have a higher temperature in the axilla. Of course, the most accurate is the rectal temperature, but this is rarely necessary for the diagnosis. An increased pulse-rate, over a hundred, with or without rise of temperature, is very suggestive, and if the pulse-rate is higher than the temperature would call for, the likelihood of tuberculosis is increased.

A slight hemorrhage of arterial blood always causes the laity to suspect phthisis, and the suspicion is quite generally correct. Hemorrhages can occur from the blood-vessels of the throat and larynx, although they are generally very small in amount, and most frequently venous, and many a patient has been condemned to treatment for tuberculosis on account of a perfectly simple throat hemorrhage.

The occurrence of typical night sweats, that is, cold sweats toward morning, is a frequent and suggestive symptom of tuberculosis; but patients who have been weakened by illness, overwork, or overexertion may have this symptom for a short time, though it should always create suspicion.

A rarely noted symptom of tuberculosis, which may occur early in the disease or not until later, is atrophy of the mammary gland on the affected side; also, the hand and foot may be colder on the side affected, or if they are hot and dry, may be warmer than on the other side of the body. Conjunctivitis, blepharitis and an inequality of the pupils, with dilatation of the pupil on the same side as the affected lung, have been noted. The skin of the tuberculous patient is often dry, and may be rough and sallow; there may be increased pigmentation, especially around the nipple on the diseased side, and there may be chloasmic spots. Bright red spots on the cheeks, and the glistening eyes occurring in the late afternoon, with the hands dry and hot, are almost pathognomonic. At other times of the day there is pallor, with the veins prominent all over the body; the face looks sad, and there is languor and a rapid, collapsing pulse. These are all signs that may occur at an early period.

Before deciding that the sputum of a suspected patient, or a patient who has incipient tuberculosis, is free from tubercle bacilli, several examinations must be

made. The sputum may be found free from bacilli on several days, and then on the last day of the examination found to be loaded with them. The number of bacilli found has no great bearing on the prognosis of the disease. On the other hand, if large numbers of tubercle bacilli continue to be present after considerable periods, probably cavitation is either present or developing. The prognosis can hardly be made from the character or appearance of the tubercle bacilli, although it has been thought that large numbers of the smaller tubercle bacilli show greater activity of the disease.

A fluoroscopic examination of the chest will often reveal, even before clouding of any portion of the lung occurs, a diminished excursion of the diaphragm on the affected side. This is very suggestive of tuberculosis. Roentgenograms may show areas of beginning lung trouble as well as diseased bronchial glands. Besides the skin tuberculin tests, the conjunctival test and the interdermal test, all of which are more or less reliable, a positive diagnosis can generally be made by injecting the original tuberculin subcutaneously.

A number of substances can produce a reaction in tuberculous patients similar to that from tuberculin. Nucleoproteins, cinnamic acid and some alkaloids can do this.

The tuberculin used in making the test for tuberculosis is a purified extract prepared from tubercle bacilli. The details of its preparation need not be described here. Its injection causes a leukocytosis and stimulates the production of ferments, especially in the cells and tissues immediately surrounding the tubercles. These ferments then act on the poisons that have been produced by the tubercle bacilli and have accumulated in the tubercles.

The fever reaction is due to the toxins set free from the tubercles and to the action of the enzymes on these toxins. If some form of tuberculin is used for curative purposes, the reactions will become less and less, as more of these sealed-in toxins are set free. Also, reaction may be less as the system becomes less sensitive and hence immune to the irritation of these toxins. It can readily be seen that if too large doses of tuberculin are administered, either as a diagnostic test or as a curative treatment, such a large amount of these toxins might be liberated as to cause an intense fever reaction, to the disadvantage of the patient. Also, it is quite possible by such treatment to liberate live tubercle bacilli and cause general infection. Hence the greatest possible care should be exercised in using tuberculin, either as a test or as a treatment, and the first doses should be of minimum amounts.

As tubercle bacilli are not readily killed by leukocytes, the latter surround the mass of bacilli and disintegrating and caseous material; the resulting lesion is called a tubercle. The fight, then, of enzymes and toxins goes on between the two opposing factions. Some of the leukocytes and some of the bacteria die, with the production of toxins and enzymes. If these are liberated by the local inflammatory process the fever reaction and the other concomitant symptoms occur in the person if sufficient amount of the toxin circulates in the blood. Every tubercle that breaks down and is evacuated into the bronchial tubes and expectorated, is a step toward recovery. This satisfactory process, however, cannot go on without a general disturbance of the patient, with loss of appetite, loss of weight and emaciation, and it becomes a question whether the person can stand the disease until the tubercles are evacuated, and whether or not such evacuation will produce cavitation. The object of a tuberculin treatment is to aid the patient slowly to eliminate his tubercles when the disease in him has come to a standstill, and he shows no tendency to recovery, even if he is not growing worse. The theoretical object, then, aimed at by treatment is the elimination by the patient of most of the tubercles, or the permanent encapsulation of those not eliminated by such fibrous and calcareous material as will cause them to be forever outside of the body, as far as any relationship to the blood and lymphatic circulation is concerned. On the other hand, if too many tubercles are broken down at once, too persistently or too continuously, the prognosis is bad, and tuberculin is ordinarily not indicated.

Our conclusions as to the subcutaneous tuberculin test may be as follows: 1. It is a reliable test, and is pathognomonic in children and young adults. In older adults, if the test is positive, it may be relied on as showing a tuberculous focus somewhere, but if the test is negative it is not so reliable as in children. 2. It should not be used carelessly, though perfectly safe if the beginning dose is small. 3. The tuberculin test is unnecessary when a localized pulmonary lesion has been discovered by physical examination. 4. When we recognize that a patient is tuberculous or is liable to become so, although we find no physical lesions, the tuberculin test is unnecessary, as our preventive treatment should be the same whether reaction is positive or negative. 5. In doubtful bone, tendon or joint inflammations, or when for any reason a decision must positively be made, the tuberculin test should be used.

Although a reaction from tuberculin has occurred in cases of carcinoma, syphilis and actinomycosis, still, these instances are so rare that there is the probability that such patients had a latent tuberculosis, and hence the test may be considered positive. In advanced cases of tuberculosis, however, the test may be negative on account of a tolerance to the toxins already described.

The beginning dose of "old tuberculin" for diagnostic injection is 0.1 mg., the second dose should be 1 mg., the third may be 3 mg. and the fourth 5 or 6 mg. Of course, a reaction occurring with any dilution would prevent the necessity or advisability of giving another injection. A suspected patient not reacting to 5 or 6 mg. should be considered free from tuberculosis.

If a physician desires, he may receive direct from the serum and bacterin firms the "old tuberculin" properly diluted for the diagnostic test.

Tuberculin triturates and tuberculin vaccines have been administered by the mouth as a possible treatment of tuberculosis, but such administration is as yet purely experimental.

The tuberculin injection test should be used only with a patient who is at rest and does not have a morning rise of temperature as shown by a series of observations. The injection should be given at about 9 p. m., and if there is a rise of temperature in the early morning, it should be considered a positive reaction, and if there is pain, swelling or heat discovered at an external suspected area, as a joint, or if there is congestion or moist râles are discovered in a suspected area of lung-tissue there is a "focal reaction." If there is a marked reaction at the region of injection (the "local reaction"), even if there is no general reaction, the patient probably has tuberculosis, and it may often be unnecessary to continue the injection of higher dilutions.

The "intradermal" tuberculin test for the diagnosis of latent or concealed tuberculosis (first described by Mantoux and Hutinel[1]) has been recently revived and recommended by Jeanneret.[2] The advantage of this test over the von Pirquet and the Moro skin tests is that a known amount of tuberculin is injected between the layers of the skin. The reaction is a local one, and there is no general disturbance like that occurring with the subcutaneous tuberculin test.[3]

A valuable diagnostic test, and also of considerable prognostic value, is the determination of the presence of albumin, and its amount, in sputum. Albumin is generally present in all sputa of tuberculous origin, and it is considered that persistent absence of albumin from sputa shows that its source is non-tuberculous. For a discussion of this subject and a simple method of making the test see article by Holm and Himmelberger.[4]

PROGNOSIS

In the first place, as to the probability of cure of tuberculosis, it should be remembered that statistics of necropsies show that from 30 to 35 per cent. of patients who have died from causes other than tuberculosis show evidence of that disease, either healed or latent. In general, the prognosis of pulmonary tuberculosis is modified by the family history, by the causes which have allowed the tuberculosis to develop, by the whole general condition of the patient, and by the amount of lung-tissue involved. A tuberculous process that begins in the lower part of the lung, following a pneumonia, gives a bad prognosis. A generally debilitated and anemic condition will necessarily slow or preclude a cure. An associated laryngeal or intestinal complication makes the prognosis very serious.

When a patient is first seen, the prognosis should be guarded, as it is only after weeks or months that the decision can be made as to how much this patient may improve, for even a person who looks otherwise well, except for the fact that tuberculosis is discovered, may develop an acute form of the disease. The physician should individualize the patient, not only as to his surroundings and his occupation, but also as to his mentality. His disposition should be studied. It is a mistake to send a patient to a sanatorium who will be restless under sanatorium restrictions, or who will be so seriously homesick as to lose his appetite, or who will not at all obey instructions. Therefore, the mentality, the individuality and the willingness to cooperate of the patient is of great importance in the prognosis. On the other hand, even a child from 1 to 2 years of age who becomes tuberculous need not necessarily die of the disease. It is possible for children seriously affected with more or less general tuberculosis to recover. It is stated that 80 per cent. of children infected before the age of 1 year will die, while not more than 20 per cent. of those infected after 2 years of age will die.

It is a question whether asthma, which was long supposed to protect against tuberculosis, really does so. Certainly an asthmatic patient could have tuberculosis. It seems to be a fact that persons who suffer from heart-disease, especially if there is sufficient loss of compensation to cause more or less dyspnea and pulmonary passive congestion, do not have tuberculosis so readily. This subaeration may interfere with the growth of tubercle bacilli.

Tuberculosis of the cervical lymph-nodes may be due to an auto-infection. In other words, bacilli may be contained in the patient's own sputum, infect the tonsils and be there carried to the cervical glands.

A more or less continuously rapid pulse gives a bad prognosis. A temperature that is not greatly lowered by rest gives a bad prognosis. Of course, the case is serious as long as there is a morning fever. A patient whose temperature is normal or subnormal in the morning, even if there is considerable rise in the afternoon and evening, may not only improve, but may recover. Any sexual excess, and even any sexual act during tuberculosis will aggravate the condition. A slight gain in weight, while desired and looked for, and generally an indication that the patient is improving, is not necessarily a positive indication that the prognosis is absolutely good, as many instances occur in which the patient gains weight for a time, under proper treatment, but the disease progresses. Therefore, a slight but steady gain in weight should be considered satisfactory, but should not cause too favorable an opinion of the outcome to be given.

It is considered a good prognosis when the lymphocytes in the blood are increased in number, showing that the nutrition is improving. It has also been considered that a normal number of eosinophils gives a good prognosis, while an absence of eosinophils gives a bad prognosis. Whatever the condition, however, it should constantly be borne in mind that pulmonary tuberculosis is curable in the first and second stages, and a cure may even take place in the third stage, or when there are cavities.

Reyher[5] has found a coincidence between orthostatic albuminuria and tuberculosis. He investigated twenty patients suffering from this condition of orthostatic albuminuria, and found a hereditary taint, enlarged cervical glands, enlarged bronchial glands and reaction to the tuberculin test in all of them.

Pregnancy in a tuberculous patient makes the prognosis bad, and should call for a consultation to decide as to whether or not abortion should be produced.

(To be continued)

1. Mantoux: Bull. de l'Acad. de méd., Paris, Oct. 27, 1908.
2. Jeanneret: Rev. méd. de la suisse romande, 1913, No. 5, p. 373.
3. This test is reviewed in the American Journal of Diseases of Children, January, 1914, p. 62.
4. Holm and Himmelberger: The Quantitative Determination of Albumin in Sputum with Potassium Ferrocyanid, THE JOURNAL A. M. A., Jan. 3, 1914, p. 20.
5. Reyher: Monatschr. f. Kinderh., 1913, xii, 2, p. 82.

Bibliography on Eugenics.—The educated man, as Oliver Wendell Holmes observed, is not one who knows everything but one who knows where to find what he wants to know. For this reason bibliographies, reference lists and other forms of concise information are always welcome. Probably no other subject has aroused the amount of general interest during the past year that has been given to eugenics. This word has been used in every possible sense, in many cases with little accurate knowledge on the part of those using it as to its meaning or limitations. Probably on no other topic has THE JOURNAL received so many requests for information. The publication by the State Board of Charities of New York of a bibliography on eugenics and related subjects under the designation of Bulletin 3 is therefore welcome. According to the compilers only such books are included as throw some light on eugenics and cognate subjects. The titles are arranged under twenty-seven subdivisions. The high standing of the New York State Library, in which the compilation is made, is ample assurance of the exhaustiveness and accuracy of the bibliography. Those interested in this field will be quick to appreciate the value of this compilation.

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SATURDAY, MARCH 28, 1914

FOOD CUSTOMS AND DIETARY CLAIMS

In discussing the extremes of nutrition that may be cited as illustrations of the ability of the human organism to adjust itself satisfactorily to enforced departures from what is customarily regarded as the rational dietary standard, we referred, not long ago, to the case of the Eskimos.[1] These people, at times, indulge in the habit of stuffing themselves to the utmost with food rich in protein and derived exclusively from the animal kingdom. Their extravagant dietetic habits in this direction are not chargeable with any immediately serious consequences; and some of the supposed virtues of the ration so rich in protein have even been extolled in recent writings on nutrition.

The time has come when those who write the newer chapters of this science must display due caution. As a prominent investigator has lately remarked, it is well to refrain from opening new channels for the baseless theories, fads and fancies with which the whole literature concerning the relations of food to health and disease is so flooded. The surest way to emphasize the necessity of serious reflection before any wide-reaching conclusions are promulgated on the basis of some report, accurate though it doubtless is, regarding the food customs of a group like the Eskimos, is to counterbalance it with reliable statistics representing the other side of the controversy. For this reason we refer to the equally uncommon case of certain Japanese bonzes, or Buddhist monks, who represent the acme of the extreme vegetarian cult. In an inquiry instituted several years ago by Yukawa[2] among two hundred persons, all of whom were reputed to have exceeded one hundred years of age, it appeared that about one-third of these had been accustomed to a diet preponderatingly vegetarian, the exceptions being in the nature of indulgence in fish once every week or two. Nearly half the subjects examined lived on a regimen derived exclusively from the plant world, even eggs, milk and animal fats being excluded. This record led Yukawa to undertake nutrition investigations on groups of the strictly vegetarian bonzes, both young and old, over a period of several months. The individuals, as a rule, are of rather small size and perform little hard work; but even with this consideration their food intake is surprisingly small. It consists largely of rice with some vegetables and radishes. The nitrogen balance was positive, so that there was no loss of tissue protein at the time of these studies. In extending them more recently, Yukawa[3] has furnished additional illustrative data showing a metabolism of less than 45 gm. (about 1½ ounces) of protein a day by persons weighing from 44 to 52 kg. (from 96 to 114 pounds). The utilization of the food was excellent, and the description of the nutritive condition of the individuals using this type of diet contrasts with the extremely unfavorable reports of McCay[4] regarding some of the races of India, which exist on a low plane of protein nutrition and likewise depend on food of plant origin.

It is not our desire here to review the vigorously debated questions suggested by reports of high and low protein, mixed and vegetarian systems of diet, respectively. We wish merely, by furnishing examples of the extremes of possibility in human nutrition, to protest, in this indirect way, against the habit, even among physicians, of hasty generalization in giving dietary advice. It is in a sense true, as Sir Lauder Brunton has written, that the subject of food is one on which countless experiments have been made by myriads of men during thousands of years. It may also be admitted that in all parts of the world, from prehistoric times until the present, men have been constantly engaged in finding out what things were good to eat and what things it is best to avoid. But it has remained for the present generation to put the study of dietetics on a scientific footing. We must give its newer knowledge a chance to assert itself with the same critical reserve that obtains in other successfully cultivated fields of endeavor.

1. Some Extremes in Nutrition, editorial, The Journal A. M. A., March 7, 1914, p. 780.
2. Yukawa, G.: Ueber die absolut vegetarische Ernährung japanischer Bonzen, Arch. f. Verdauungskr., 1909, xv, 477.
3. Yukawa, G.: III and IV. Bericht über die absolut vegetarische Ernährung japanischer Bonzen. Arch. f. Verdauungskr., 1913, xix, 356.
4. McCay, D.: The Protein Element in Nutrition, London, 1912.

THE PRODUCTION OF CEREBROSPINAL FLUID

Lumbar puncture has become a widely practiced procedure on man, for both diagnostic and therapeutic purposes. It is, therefore, incumbent on scientific medicine to inquire, more minutely than has been done hitherto, into the physiology of the cerebrospinal fluid — to consider the mechanism of its secretion, its functions and the course of its movements in the body. For this reason we refer in some detail to an extensive study[5] involving both physiologic and pharmacologic considerations in relation to what was for a long time considered as ordinary tissue-lymph bathing the nervous structures. It is almost universally accepted that the main source

5. Dixon, W. E., and Halliburton, W. D.: The Cerebrospinal Fluid: I. The Secretion of the Fluid, Jour. Physiol., 1913, xlvii, 215.

of the fluid is the "choroid gland," as Mott terms it. This English neurologist regards the cerebrospinal fluid as playing the part of a lymph in the central nervous system, that is, on the one hand, as a nutrient fluid which comes into immediate contact with tissue elements, and, on the other, as a medium which receives from the nervous tissues the products of their metabolism. There are further possibilities expressed by the secretory hypothesis, which assumes that the cells in the choroid plexus are involved in a way in the production of the cerebrospinal fluid that cannot be explained on the basis of simple diffusion. In this respect we are merely repeating here the controversy so long kept alive in physiology respecting the essential nature of the secretion. Cerebrospinal fluid, too, may prove to be a typical secretion.

There is no concordance in regard to the total fluid formed per day in man. It is certain, however, that in man any puncture of the dura mater may lead to a continuous flow; and a drop every two or three seconds may continue to be discharged through a puncture from accident or operation for days without any marked ill effects. Many cases in man have been described in which the flow persists for weeks, or so long as the orifice remains open, often at the rate of 100 c.c. (3⅓ ounces) per hour, or even more.[1] One must conclude from this that the fluid is being continually poured into the cerebrospinal canal cavity, and through the foramen of Magendie into the subarachnoid cavity, with which it is continuous.

The principal new fact brought out by Dixon and Halliburton is that an intravenous injection of an extract of choroid plexuses (choroid gland) produces an increased secretion of cerebrospinal fluid. These English investigators have taken pains to exclude purely mechanical factors as the sole cause for this augmentation, and they are convinced that altered respiratory or vascular conditions will not account for it. The production of a specific chemical substance — a hormone — regulating the production of cerebrospinal fluid at once comes to mind. Dixon and Halliburton state that whether or not the "choroid hormone" originates in the central nervous system, it is undoubtedly true that extracts of the brain produce the same effects as are brought about by the choroid extract. They venture the belief, therefore, that some product of the brain's metabolism passes to the choroid plexus, and that this stimulates the secreting epithelium, which causes the plexus to become active. In cases of general paralysis and brain softening in which disintegrative processes are excessive, the cerebrospinal fluid is found to contain an active material which produces the same effects. No conclusion can yet be drawn regarding the precise chemical nature of the active brain or choroid product.

If it be true that the stimulating substance is formed as the result of the metabolism of the brain, some analogy is presented to other hormones which act as chemical stimuli. There are other substances that accelerate the flow of cerebrospinal fluid, notably carbon dioxid; this, however, is not specific in its action, and belongs to the group of products which promote the increased volume by indirect responses. We are reminded that the cerebrospinal fluid of man contains a high percentage of carbon dioxid, and that an excess of this in the blood causes an increase in the rate of secretion. Carbon dioxid is a poison to the central nervous system, and it is suggestive that cerebrospinal fluid is a means for the rapid excretion of carbon dioxid during nervous metabolism.

THE ETIOLOGY OF HODGKIN'S DISEASE

In this brief account of some interesting recent work on the cause of a heretofore obscure disease, the name "Hodgkin's disease" is used as synonymous with lymphomatosis granulomatosa of certain European writers. Formerly included under pseudoleukemia and no doubt confused with different diseases, the common feature of which is enlargement of the lymphatic structures, Hodgkin's disease, in the sense in which the term is used here, is now recognized as a distinct disease characterized by peculiar changes in the lymph-glands and spleen of a chronic inflammatory nature, and consequently susceptible of definite diagnosis by means of microscopic examination of affected tissue. The microscopic picture shows a variety of cells with more or less fibrous tissue and also areas of necrosis. In addition to fibroblasts and lymphocytes there are large cells and giant-cells as well as plasma and eosinophil cells, the latter often in enormous numbers, and usually associated with polymorphonuclear leukocytes. The number and relation to each other of these various cells, as well as the quantity of the fibrous tissue, vary greatly. Areas of necrosis are frequent and usually not very large.

Sternberg, who did so much to separate this disease from the other diseases of the lymphatic system, at first believed that it concerned a special and peculiar form of tuberculosis, and he as well as a number of others did find tubercle bacilli in occasional cases; but it has now become apparent that most likely this is explainable as due to coincident tuberculous foci. In 1910 Fraenkel and Much demonstrated in the tissues from twelve of thirteen cases of Hodgkin's disease Gram-positive, granular bacilli which resisted the action of antiformin, but were not acid-fast. Since then similar observations have been made by others. Recently Kusunoki,[1] working in Kaufmann's laboratory in Göttingen, found such bacilli in the characteristic lesions of every case examined, sixteen in all. These bacilli all resisted antiformin, were decolorized by acids and were Gram-positive and granular. In the sections they were especially numerous in the areas in which large cells and giant-cells were numerous.

1. Kusunoki: Virchows Arch. f. path. Anat., 1914, ccxv, 184.

At this point several interesting questions arise which can only be referred to. Are these interesting bacilli modified forms of tubercle bacilli? Naturally, this remains an open question; but on first impression it does not seem likely that they are identical with the genuine tubercle bacillus. Another question is, What is the relation of these bacilli to the bacilli that recently have been isolated in culture from affected glands in Hodgkin's disease by de Negri and Miesemet, Bunting and Yates and others? Morphologically there is much resemblance; and de Negri and Miesemet, who found rods like those mentioned in two cases from which they secured cultures, regard them in their cases at least as identical. The complete solution of this question probably awaits the successful experimental reproduction of the disease, in which Bunting and Yates report promising results in the monkey.

The effects of vaccines made from the bacilli cultivated from cases of Hodgkin's disease also no doubt may be expected to help in solving this question. The statement certainly is justified that the full solution of the problem of the etiology of Hodgkin's disease does not seem far away.

THE TRANSMISSION OF PELLAGRA BY MEANS OF INSECTS

The hypothesis that pellagra is an infectious disease transmitted by some biting insect is based entirely on epidemiologic data. The theory originated with Sambon, who first incriminated the buffalo-gnat (*Simulium*), but subsequently had to enlarge his views by including some other biting fly, since he found pellagra in certain places unassociated with the prevalence of *Simulium*. Epidemiologic studies on pellagra, which have been the fashion of late, are valuable if made without bias, carefully and honestly. Unfortunately, the epidemiologic data on pellagra, collected with the expenditure of so much energy, in too many instances bear witness to the mental bias of an observer in favor of his preconceived theory, which to the unprejudiced mind seems rather scantily supported by fact.

Arguments from epidemiologic data, moreover, present one fundamental limitation which should not be forgotten. While epidemiologic facts may make it possible to trace to its source an outbreak of a disease of known etiology, they cannot alone solve the problem of a disease of unknown etiology. In the investigation of an outbreak of typhoid fever, for example, the etiology and transmission of which are fairly well understood, some fairly definite conclusions concerning the nature and cause of that outbreak may be formed from epidemiologic data alone. This is due to the fact that the epidemiology and etiology of this disease have from long experience been fairly well correlated. On the other hand, in dealing with a disease of absolutely unknown etiology like pellagra, epidemiologic data assume an entirely different aspect. Here we have no reliable means of discriminating between essentials and non-essentials. What appears to be the most trivial circumstance may in reality be of great importance; and what appears most important may ultimately prove to be of almost negligible value, so that matters which seem to have no connection with the disease may, when one has the key to the situation, prove to be essential epidemiologic features. This has been amply proved many times in the investigation of various diseases. Conclusions concerning etiology must therefore be drawn with the most extreme caution and only tentatively when based solely on epidemiologic data.

These considerations may well be borne in mind in connection with a report of recent investigations covering a period of several months, undertaken by Jennings and King in cooperation with the Thompson-McFadden Pellagra Commission, in Spartanburg County, South Carolina. The authors state that they entered on the investigation "with no bias in favor of the infectiousness of pellagra or its transmissibility by insects." Of course, however, "it was necessary to assume that both were among the possibilities." They considered ticks, lice, bedbugs, cockroaches, horse-flies, fleas, mosquitoes, buffalo-gnats (*Simulium*), house-flies and stable-flies (*Stomoxys*); and, on what they deemed ample grounds, rejected all except the stable-fly (*Stomoxys calcitrans*) as possible factors in the transmission of pellagra. This fly, they think, "displayed certain salient characteristics which seem to qualify it for the rôle of a transmitter of pellagra." They find support for this view largely in certain epidemiologic characteristics of pellagra, notably its seasonal occurrence, peculiarity of sex incidence (predominance of cases in females) and age distribution, and the occurrence of isolated sporadic cases.

Jennings and King have not taken into account the fundamental limitation of epidemiologic arguments mentioned above. Thus, in commenting on the greater prevalence of disease in females, they say: "So pronounced an inequality must be based on some fundamental difference either in environment or physiologic organization of the sexes." As a matter of fact, it is not necessarily based on either. The epidemiology of such diseases as beriberi and ergotism, each of which is regarded by many as possessing close analogies with pellagra, has frequently shown similar peculiarities of sex incidence. The apparently anomalous distribution of pellagra in a family or household (frequent—perhaps usual—occurrence of only one or two cases in the family group) is also paralleled in beriberi and in ergotism. It is sometimes difficult to understand the cause of such phenomena in diseases which etiologically are so entirely dependent on food. Yet this observation was amply confirmed. In selecting analogies in support of the theory of insect transmission, moreover, Jennings and King were unfortunate in mentioning poliomyelitis.

At present the theory of the transmission of this disease by insects seems scarcely better substantiated than does the parallel theory with regard to pellagra.

As an intensive field of study in entomology, this investigation has apparently been well done; but too much reliance should not be placed on conclusions drawn by such methods from epidemiologic data.

TRANSMUTATIONS IN BACTERIAL SPECIES

Variations and transformations in the biologic characteristics of different species of bacteria have been noted by many observers. The changes noted earlier pertained to minor characteristics of the organism, such as variations in virulence, capsule formation and fermentative power, but recently reports indicate that characteristics which have been regarded as essential to the identity of the species have been so modified through environmental conditions that, if these changes are verified by further experimentation, we shall be led to question the permanence of bacterial species. Thiele and Embleton[1] report decided changes in the characteristics of *Bacillus mycoides*, which is a non-pathogenic organism common in garden soil. This organism grows at low temperature as a slender, motile, non-capsulated, flagellate bacillus, and does not survive incubation at body temperature. By gradual increase in the temperature of incubation the organism was educated to grow at the temperature of the body. Animals were then sensitized against this organism by injecting them with a large quantity of killed bacilli, followed after from ten to fifteen days by an injection of living bacilli. The organisms were recovered from the animal by culture and the process repeated. In this way the organism became pathogenic, lost its flagella and motility, acquired a capsule, became shorter and thicker, and, in short, possessed the characteristics of *B. anthracis*. These experimenters assert that it also produced lesions indistinguishable from those of anthrax, and was so virulent that a small inoculation intraperitoneally killed guinea-pigs in twelve hours. They report that in a similar way the smegma bacillus was raised to such a degree of virulence that it produced death in normal rabbits in from seven to twenty days following inoculation. Typical miliary tubercles containing acid-fast bacilli were found throughout the viscera and serous membranes. Thiele and Embleton also report the transformation of the Hoffmann and other diphtheroid bacilli into virulent organisms indistinguishable either by fermentative tests, animal inoculation or morphology from the true *B. diphtheriae*.

Rosenow,[2] in a recent communication, reviews the observations of others on transformations among the members of the streptococcus group, and gives the results of an extensive series of experiments. The organisms used were the pneumococcus, *Streptococcus viridans, S. hemolyticus, S. mucosus* and *S. rheumaticus*. The experiments included the culture of the organisms under a variety of conditions, both favorable and unfavorable, and the notation of the changes produced in the morphology, biochemical properties and virulence of the different strains of cocci. The organisms were grown in oxygen tension varying from an atmosphere of pure oxygen to complete anaerobic conditions, in mediums of hypertonic and hypotonic salt percentage, on slightly dried mediums at temperatures slightly above or below that of the body, and subjected to the influence of various body-fluids, as sterile milk, urine, ascites fluid, etc. The organisms were grown also within the body-cavities and in the circulating blood of living animals exposed to the influence of other bacteria as in symbiotic growth with *B. subtilis*, etc.

By various combinations of these conditions, organisms isolated from a wide variety of sources, including pneumonia, erysipelas, scarlet fever, puerperal sepsis, arthritis, tonsillitis, cow's milk, etc., were so completely changed in character as to correspond in every detail to the description of other cocci than the one with which the experiments began. That these mutations were complete would seem to be established by the production of specific opsonins and agglutinins and by the ability to produce characteristic lesions when inoculated into animals, as well as by the morphology and biochemical and fermentative properties of the organisms. For example, a hemolytic streptococcus when converted into a pneumococcus was no longer able to hemolyze red corpuscles, caused death in inoculated animals by rapid pneumococcemia, was agglutinated by antipneumococcus serum and not by antistreptococcus serum, acquired a capsule, was no longer susceptible to phagocytosis, grew as a diplococcus and not as a streptococcus, fermented inulin and raffinose and not mannite, and became readily autolyzed in sodium chlorid solution and in bile. Transmutations as complete as this are reported of each of the members of the streptococcus-pneumococcus group. In some cases the extra precaution was taken to begin with a strain arising from a single coccus isolated by the Barber method. In these cases the transformations were as complete as when the regular cultural methods only were employed.

In bacterial cultures we are able to subject many generations of the species to changed environmental conditions within a short space of time; we are also dealing with the lowest forms of life — forms in which there has been a minimum of differentiation and specialization of function. Considering these facts, we are not surprised that environment as represented by varying cultural conditions will produce variations in the bacterial species within a comparatively short time.

Rosenow's observations, aside from their biologic significance, suggest one explanation of the supervention

1. Thiele and Embleton: Ztschr. f. Immunitätsforsch. u. exper. Therap., 1913, xix, 643.
2. Rosenow: Transmutations within the Streptococcus-Pneumococcus Group, Jour. Infect. Dis., 1914, xiv, 1

of one clinical type of infection on another, as in the sequence of tonsillitis, rheumatism, endocarditis, etc. If transmutations such as he observed may follow changed conditions *in vitro*, environment *in vivo* may also cause changes in the character of the invading organism. In these transmutations Rosenow noted that the different mutants showed marked special affinity for certain tissues in the animals inoculated, one form localizing always in the joints, another in the muscles or in the structures of the heart. It is clear that these results, if accepted, have a wide significance, not only with respect to the causation of certain infectious processes, but also with respect to their treatment.

PALEOPATHOLOGY

With new "ologies" coming into vogue in science to-day about as rapidly as new species of microorganisms were described a few years ago, it begins to tax one's memory to relegate each novelty to its appropriate place among the ever-growing variety of disciplines which one is expected to appreciate, if not actually to master. Paleopathology is one of the latest. This word was coined by Dr. Marc Armand Ruffer, not to suggest the science of extinct diseases, as a comparison with the well-known term "paleontology" might lead one to suppose, but rather to apply to "the science of the diseases which can be demonstrated in human and animal remains of ancient times."[1] The singular conditions of custom and climate which have preserved the mummies of old Egypt until the present day have made it possible to conduct post-mortem examinations on the people of the earlier centuries and to compare their anomalies of anatomic structure or the defects produced by disease with the pathologic manifestations of the present day and generation. Such investigations have already unfolded many facts of interest in respect to the existence and incidence of disease in bygone times, and have contributed important facts to the history of medicine.

The perfect preservation of many of the bodies which have become available in Egypt is little short of remarkable. The features of the real mummies are widely known. Coptic bodies which have recently been examined by Ruffer belong to a somewhat different class. They came from Antinoë in Upper Egypt; and dating from the fifth to sixth century they were therefore from about 1,400 to 1,500 years old. They had undergone no artificial process except that, at one time, they had been covered more or less extensively with salt. The real preservative had been the dry Egyptian sand in which they had originally been buried enclosed in wooden coffins. Never having been disturbed by the embalmer, the organs were *in situ*, and the bodies contained no resin, gum or any materials such as mud, sand, rags, etc., generally used in old Egypt for packing the body after removal of the organs.

In our environment, where special precautions are promptly necessary to preserve the remains of the body from deterioration or decay, it is surprising to hear of microscopic sections showing the glands of the alimentary tract in the Coptic bodies in a remarkably fine state of preservation after all these centuries, or to learn that the lobes of the brain and some of the convolutions were recognizable and that the fibers and valves of the heart could be made out, or again to note that in two aortas well-marked calcareous plates were found. Abnormalities of the bony structure are, of course, more perfectly preserved. Ruffer points out that the demonstrable occurrence of spondylitis deformans among ancient Copts is one more proof that the disease has existed throughout Egypt from the remotest times and is independent of climate. It has been found in bodies buried close to the Mediterranean shores, in bodies from Upper Egypt and Nubia, and even in a skeleton buried in the tropics at Merawi, one of the hottest and dryest places in the world. In the Coptic bodies a peculiarity of the disease is that as a rule it was localized to a few vertebrae.

Among other pathologic phenomena not hitherto described for ancient peoples, Ruffer reports instances of hypertrophy of the middle turbinated bones. This has now been found in both Egyptian skulls and Greek skulls dating from the time of Alexander the Great. Pathologic changes of the soft parts, recognizable macroscopically, were not common. Judging from two cases of hypertrophied spleen which were found in Coptic bodies, Ruffer ventures the suggestion that these people suffered from malaria.

Pyorrhea alveolaris and periodontitis appear to be as old as the human race. Evidence of such disease has been found in prehistoric skulls and in the specimens from almost all nationalities. Ruffer has found nothing to suggest that the Copts knew anything about dentistry. The long-recognized bad state of the teeth of ancient Egyptians is again emphasized in the Coptic bodies. Almost every skull has some serious dental defect. It is suggested that this may perhaps be accounted for by the fact that very little care of the dentition appears to have been taken. The thick incrustations of tartar are sufficient evidence that the Copts did not clean their teeth at all. In many peoples and animals the absence of the tooth-brush is compensated for by the fact that the food is hard, fibrous and raw, requiring a good deal of chewing, which mechanically cleans the teeth. In ancient Coptic times this does not appear to have been the case, for in contrast to the predynastic bodies in which attrition is very marked, this is slight; in fact, being less marked than it is in Egyptians of the present day. Ruffer concludes that the Copts of Antinoë lived chiefly on cooked soft food, chewed without effort. Caries was extremely common and was possibly due to the nature of the food consumed.

1. Ruffer, M. A.: Studies in Palaeopathology in Egypt, Jour. Path. and Bacteriol., 1913, xviii, 149.

THE LOAF OF BREAD

The wide-spread propaganda for the purity of the food and drug products of this country has resulted in the necessary attempt to standardize all articles which enter into these categories. In the case of certain familiar materials like sugar and coffee this has not involved any formidable difficulties. The question as to what constitutes mince pie, on the other hand, has aroused storms of claims and counterclaims on behalf of the recipes of different regions and generations. Like numerous other illustrations which might be cited, this experience has served to call attention to the really great diversity of our food concoctions and the pardonable laxness in the use of current terms that appear in the American menu. One may well apply here the proverb: *De gustibus non disputandum est.*

It might be expected that so common an article of diet as bread at any rate would exhibit some uniformity of composition within relatively restricted regions. Yet if we accept the findings of the chemist of the Connecticut Agricultural Experiment Station, two hundred loaves of bread, representing the product of seventy-nine Connecticut, one Springfield and three New York bakeries, "showed wide variations in all their ingredients."[1] For example, the moisture content ranged from 27 to 40 per cent., so that in some instances at least the bread contained excessive amounts of water. The ether extract (fat) also showed a wide range, from 0.08 to 4.37 per cent. These differences are largely due to the methods of the bakers. In some cases only flour, yeast and salt are used, while in others milk, butter, lard and sugar, either alone or in combination, are employed. The variations in fat are also due in part to the fact, noted by several investigators, that in the process of baking a part of the fat is either destroyed or rendered non-extractable by ether. In some samples the amount of fat found is much lower than could have resulted from the use of any brand of flour. The variations in ash, protein and carbohydrates are due in part to differences in moisture content, but even more to the materials used.

A comparison of the variations in the composition of a supposedly standard product like a five-cent loaf of bread is interesting in other directions also. The actual amount of dry matter per loaf in the Connecticut samples ranged from 7.9 to 12.7 ounces; the average weight of the loaf in nine cities ranged from 12.9 to 15.2 ounces. A critical analysis of the data from an entire state shows that the cheapness of the three- and four-cent loaves indicated a real saving, as far as quantity is concerned, because the relative decrease in price was greater than the decrease in weight. Inasmuch as the price of a unit of bread — the loaf — has for conventional reasons remained stable at five cents, while the cost of the ingredients has increased, changes in the real cost of the nutrients of bread must be sought in the changes of size or composition of the loaf. According to investigations made in New Jersey in 1895, loaves costing four and five cents weighed from 12.7 to 21.8 ounces, average 16.4 ounces. In 1895 in New Jersey 58 per cent. of the five-cent loaves weighed over 16 ounces, and 83 per cent. over 15 ounces, while in 1912 in Connecticut only 7 per cent. weighed over 16 ounces, and only 16 per cent. over 15 ounces. Assuming similar conditions in these two states, the average weight of the five-cent loaf has shrunk since 1895 from 16.4 to 14 ounces, or 15 per cent. When all has been said the student of nutrition will doubtless still remark that bread is cheap at any price.

1. Street, J. P.: Food Products, Bread, Rep. Conn. Agr. Expt. Sta., New Haven, Conn., Food and Drug Products, 1913, part 1, sec. 2, p. 257.

TWO THEORIES OF DIABETES

Out of the bewildering mass of theories concerning the underlying features of diabetes two points of view in particular have become prominent. One of these represents the fundamental defect in this disease as an inability on the part of the organism to utilize carbohydrate. The other view, championed earlier by Chauveau, and more recently by von Noorden, refers the difficulty primarily to an overproduction of sugar in the body. The latter condition could easily be reconciled with the now generally admitted fact that true diabetes, in practically every case, is attended with an excess of sugar in the blood, the hyperglycemia attaining varying degrees of intensity under diverse circumstances.

The existence of hyperglycemia is not sufficient to serve as a sole deciding factor between the two theories outlined above; for it is equally conceivable that hyperglycemia and glycosuria may arise from the presence of carbohydrate which is liberated in normal rather than excessive amounts, but which accumulates because it is not destroyed by the usual metabolic processes. Accordingly, the advocates of the sugar-overproduction theory of diabetes have sought for other evidence to support their contention and believe that they have found it through a study of the respiratory quotient. Unnecessary effort and too much space are required to present here the technicalities of this evidence. Briefly speaking, it involves the alleged demonstration that the respiratory quotient of 1.0, which is typical of carbohydrate combustion in the body and which is said to be obtained when the glycogen-storing liver is excluded from the circulation, can also be obtained after excision of the pancreas — the classic mode of producing experimental diabetes. Von Noorden[1] believes that herein is to be found the first positive support for the hypothesis of sugar overproduction in contrast with that of deficient destruction of carbohydrate in diabetes. His overproduction theory further maintains that the pancreas is not essential to the combustion of sugar, but serves as an

1. Von Noorden, C.: Die Zuckerkrankheit und ihre Behandlung, 1912, p. 163.

inhibitor or brake on the production of sugar, the adrenals being the real "mobilizers" of the carbohydrate.

We have taken pains in the past to point out that the still widely quoted hypothesis of von Noorden is in no way tenable and presents an incorrect picture of the chemical pathology of diabetes. The experiments on which it was founded have been shown by Minkowski, Lusk, Murlin and others to be erroneous. The latest protest against the overproduction theory, if another were needed, has been furnished from the medical clinic in Leipsic by Rolly and David.[2] They insist, as we have suggested in the past, that the primary factor in human diabetes is an inadequate utilization of carbohydrates. Whenever, as in the severe type of the malady, an excessive production of sugar perchance accompanies the inability to burn this foodstuff, the overformation of sugar is to be regarded as a secondary phenomenon, the outcome of the sugar-hunger of the tissues.

Current Comment

A DISEASE OF THE SUBLINGUAL GLANDS RESEMBLING MUMPS

It is rather singular that in mumps other salivary glands than the parotid are rarely involved. In a series of seventy-seven cases of this disease, Lietzen observed six cases in which the submaxillary glands only were swollen, and isolated involvement of the sublingual glands seems much less frequent. Hegler[3] recently described a series of eight cases of a disease greatly resembling mumps in which the involvement was limited to the sublingual glands. Seven of the cases were in hospital nurses, the eighth patient was admitted to the hospital, and similar cases occurred at the same time outside. No instance of typical mumps was, at this time, either within or outside the hospital. The disease began acutely without any special premonitory symptoms, a slight fever, with headache, muscular pains and drowsiness occurring in most cases, but all these general symptoms subsided quickly. There was only a slight leukocytosis. The most significant symptom was a tension and swelling in the submental region and the floor of the mouth; the skin under the chin became stretched, glistening and painful, the bulge resembling a double chin. The sublingual folds became prominent and sometimes the caruncle appeared red and edematous. In one case inflammation of the duct of the right sublingual gland and swelling of the right submaxillary region were also present. In most cases there was increased salivation, the secretion being clear, thin and weakly alkaline. The swelling in the floor of the mouth generally subsided in from eight to fourteen days from the beginning, recovery in all cases being complete. Bacteriologic examination of the saliva gave no positive result; neither did animal experiments. As the disease seemed to be entirely independent of epidemic mumps, no cases of mumps developing in those who came in contact with the patients, who were not isolated, Hegler believes that the cases were not instances of mumps localizing in the sublingual gland, but rather of a different infection having a special tendency to involve these particular glands. Further observations will be necessary to settle the exact nature of the novel disease described by Hegler. It is possible that the question of the identity of this disease with that of mumps might be settled by means of experiments on dogs under suitable conditions, because Herb[4] has shown that mumps may be produced in dogs by inoculating its specific organism into the duct of the parotid gland.

2. Rolly, F., and David, H.: Handelt es sich bei dem Diabetes mellitus des Menschen um eine primäre Ueberproduktion von Zucker? München. med. Wchnschr., 1914, Jan. 27, p. 169.
3. Hegler: Beitr. z. Klin. d. Infectionskr., 1913, I, 229.
4. Herb: Arch. Int. Med., September, 1909, p. 201.

A "DANGER-SCALE" FOR ATHLETICS

Inasmuch as the fundamental aim of athletics is, or at any rate ought to be, health, it is not unreasonable to ask in what degree each type of game or sport approaches this ideal of contributing to a sound body and the enjoyment of its physical resources. It will probably be found difficult to compare the health-giving virtues of tennis and cricket, of skating and basket-ball, of rowing and tug-of-war. The factors of enjoyment, of the special participation of definite organs of the body, of opportunity, season, environment, etc., are too complicated to permit a very critical analysis. But Dr. Bartsch[1] of Heidelberg has wisely suggested that it may become feasible to correlate the dangers attending the various athletic sports and to furnish a sort of "scale" — *Gefahrenskala,* as he naively terms it — whereby one could determine the relative likelihood of damage or injury to be encountered in the prominent athletic pastimes. This is not unlike the condition in industrial occupations, for many of which the incidence of accident and harm is known. If the statistics of accidents in athletics, and the personal harm known to result all too often, could be gathered in some way for purposes of public contrast, the physician and physical culture teacher could advise more intelligently regarding the desirability of participation. We believe, however, that the greatest advantage of this suggestion would lie in the reforms which the facts thus elicited would inevitably promote. A few well-attested data regarding the undoubted dangers of crew races, of football and some other much-vaunted sports might serve to direct public attention to the abuses of athletics. The promoters are then usually quick to respond.

1. Bartsch, H.: Sport und Unfall—eine hygienisch-chirurgische Frage, Berl. klin. Wchnschr., Jan. 19, 1914, p. 113.

FLEAS AND BACTERIA

Certain features in the life history and habits of the flea, an insect responsible for more than one of the ills of mankind, suggest the possibility of a sort of endless chain in the perpetuation of infectious agents. The well-known fact that the larvae of the flea feed freely and sometimes preferably on the dejecta of their own species, as well as on the feces of rats, brings out

the possibility that the intestine of the flea larvae may become infected with bacteria that are present in the food on which they are nourished, for example, the feces of their parents. This raises the question as to whether the micro-organisms can survive within the intestine during the metamorphosis from larva to pupa and from pupa to imago, until finally the adult flea is produced. The entomologist of the Lister Institute in London, Dr. A. W. Bacot,[1] has put the matter to the direct test of experiment. The results show that the alimentary canal of the flea larva may become infected with such bacteria as *Bacillus pyocyaneus, B. enteritidis, Staphylococcus albus and S. aureus,* and that the infection of the larval intestine may persist to the period of the cocoon. There is no satisfactory evidence, however, that such infection can survive the pupal stage. Inasmuch as flea larvae thrive on a diet composed of their parents' feces and as for some species this is a normal and perhaps a necessary source of food, it is significant that the *Bacillus pestis* has frequently been detected in the droppings of certain species of fleas taken from plague-infected rats. Fortunately, the conditions in the alimentary canals of flea larvae do not appear to be very favorable to the growth of the plague bacillus. At any rate, there is not the massed multiplication noted in the adult fleas. An interesting contrast to the non-survival of bacteria in the flea's intestine after the larval stage is afforded in the case of the house-fly (*Musca domestica*). Infection of the alimentary tract at the larval period of this species has been shown to survive to the adult stage.[2]

ANOTHER ANTIVIVISECTION FIASCO

As the time for legislative hearings on the annual antivivisection bills approached in New York, the suggestion began to be insinuated that the vivisectors were becoming bolder, that now only human beings would satisfy their eagerness for experimentation, and that these reckless and vicious exploiters were deliberately causing diseases in helpless children. This suggestion was seized on, emphasized and modified, especially by the Hearst papers, until from Boston to Los Angeles the headline, "Babies, Blood and Science" was preliminary to the assertion that innocent infants were being inoculated with the germs of fatal or loathsome diseases. Guinea-pigs and rabbits were becoming a drug on the market, because "babies were easier to get and were much more interesting subjects"! And from Boston to Los Angeles it was announced that following the disclosure of "experiments with luetin," forty-eight cases had been reported of children who had entered New York hospitals to be treated for minor contagious diseases and had been sent home suffering from syphilis. The leader of one of the antivivisection societies sent to the superintendent of schools the names and addresses of the children referred to in the report. The superintendent was properly scandalized by these outrageous conditions and demanded an investigation. This was undertaken by the city commissioner of health. What was the result? Investigators visited forty families named in the list. Of this number fifteen could not be found at the given addresses. Interviews were obtained with twenty-five families in which there were twenty-four children. Among these not a single case of syphilis or of suspected syphilis was found. And there was no evidence whatever of the injection of any of these children with serum or vaccine. As the commissioner's report concludes, "Time and again statements made by the antivivisectionists have been proved to be unqualifiedly false, and yet these propagandists continue to make them. Truth and antivivisectionists are utter strangers."

A FITTING REJOINDER

The statements of *Life* on medical and public health questions are usually so distorted and radically misleading that we have always supposed the average reader did not take its utterances seriously. The Boston *Herald,* however, recently replied to one of *Life's* characteristic insinuations in words which are worth quoting. *Life* said:

THE MEANEST CRIME

The assassin who shoots you in the back does a cowardly thing. But he does it frankly as an enemy, and he takes chances of punishment. He knows there are legal penalties for that kind of murder.

But when a doctor in a hospital tries his latest "discovery"—a surgical trick, or the injection of a fatal disease into a confiding patient—he does it, not openly as an enemy, but pretending to be a friend. Unlike the assassin who shoots you in the back, he has no fears of punishment. He is doubly safe, because he selects his victims among the poor, the sick, the helpless.

Such victims, always the weak and friendless, whose only hope is in health and strength, are indeed fortunate if they escape with no more diseases than when they entered.

No law protects them.

There is no punishment for this meanest of crimes.

To this the Boston *Herald* replied:

Is there anything more cowardly than lying insinuations against a set of men and women who devote their lives, and often sacrifice them, to alleviate suffering?

Is there anything more contemptible than the back-handed thrust of generality to conceal the falsity of what admits of no proof?

Is there anything more unworthy of a paper that lays claim to being a force for good than to sow the seeds of malicious untruth?

No law prevents this form of slander.

There is no punishment for this meanest of journalistic crimes.

THE CILIA OF THE NASAL MEMBRANE

Not infrequently it happens that the phenomena which we encounter every day are those about which our information is most meager. The nose is one of the few organs in which ciliated epithelial cells play a physiologic part. Aside from the mere fact of its

1. Bacot, A. W.: On the Survival of Bacteria in the Alimentary Canal of Fleas during Metamorphosis from Larva to Adult, Jour. Hyg., Plague Supplement III, 1914, p. 655.

2. Bacot, A. W.: The Persistence of *Bacillus pyocyaneus* in Pupae and Imagines of *Musca domestica* Raised from Larvae Experimentally Infected with the Bacillus, Parasitology, 1911, iv, 68. Leddingham: On the Survival of Specific Micro-Organisms in Pupae and Imagines of *Musca domestica* Raised Experimentally from Infected Larvae, Experiments with *B. typhosus,* Parasitology, 1911, iv, 333. Graham-Smith: Further Observations on the Way in Which Artificially Infected Flies Carry and Distribute Pathogenic and Other Bacteria, Rep. Local Government Board on Public Health and Medical Subjects, 1911, liii, 31.

existence and a somewhat hazy idea of its location, little is currently understood of the function of the differentiated membrane that constitutes the respiratory portion —the *regio respiratoria* in contrast to the *regio olfactoria*—of the nasal mucous tract. The ciliated epithelium which lines this tract is stratified and rests on a basement membrane like that in the trachea. The natural assumption that the cilia waft toward the anterior nares instead of the pharynx, in order most expeditiously to cast out of the body the accumulated sediment from the inspired air, is further supported by the fact that mucus containing soot and dust particles tends to collect in the anterior part of the nose, and has been verified by Bryant[1] in his examinations of the ciliary movements in fresh human tissue from turbinotomies. He remarks, also, that the convulsive reflex act of sneezing to clear the nose plainly demands a forward movement of the cilia; for if this explosion were against the action of these cells, considerable traumatism might result to the delicate Schneiderian membrane.

1. Bryant, W. S.: An Experiment to Prove that the Cilia of the Human Nose Waft Toward the Anterior Nares, Am. Jour. Physiol., 1914, xxxiii, 430.

Medical News

ILLINOIS

New Officers.—Greene County Medical Association at Carrollton, March 13: president, Dr. Frank H. McLaren; secretary, Dr. Henry A. Chapin, both of White Hall.

State Anti-Tuberculosis Society to Meet in Tennessee.—The 1914 meeting of the Illinois State Association for the Prevention of Tuberculosis will be held in Memphis, Tenn., May 12, in conjunction with the National Conference on Charities and Correction.

Chicago

Leper to Be Deported.—Arrangements are being made to have Carl Wallgren, the leprosy patient at the County Hospital, deported to Sweden.

Personal.—Dr. William Cuthbertson was elected president, and Dr. Hugh N. MacKechnie, secretary-treasurer of the Chicago Alumni Association of Toronto University, March 21.

They Were Not Vaccinated.—Forty-one cases of small-pox had occurred in Chicago from January 1 to March 14 according to the *Bulletin of the Chicago School of Sanitary Instruction.* Thirty-six of the patients had never been vaccinated. The other five were adults ranging in age from 57 to 26 and had been vaccinated in early childhood. Of the last twenty-one victims of the disease nineteen had never been vaccinated.

INDIANA

Health Officers Organize.—At a meeting of the Health Officers of Lake County held in East Chicago recently, the Lake County Health Officers Association was formed with the following officers: president, Dr. William D. Weis, Hammond; secretary-treasurer, Dr. John E. Metcalf, Gary.

Personal.—Dr. William H. Gilbert, Evansville, charged with having set fire to his hospital, was acquitted, March 14.——Dr. and Mrs. Arthur R. Simon, La Porte, will sail for Europe April 15.——Dr. Charles M. Clayton, Indianapolis, charged with the murder of Joseph H. Stout, was acquitted February 27. ——The office of Dr. Orville A. Bigham, St. Anthony, was destroyed by fire recently.

IOWA

New Officers.—Marshall County Medical Society at Marshalltown, February 17: president, Dr. Winfield S. Devine; secretary-treasurer, Dr. George M. Johnson, both of Marshalltown.

Personal.—The house of Dr. William L. Allen, Davenport, was damaged by fire to the extent of $8,000, March 13.—— Dr. Benjamin E. Eversmeyer, Muscatine, is ill with septicemia.——Dr. Louis F. Cummings, Hopkinton, sustained severe injuries from the overturning of his motor-car, March 15.

Epileptic Colony Located.—The State Epileptic Colony has been located near Woodward, about nineteen miles northwest of Des Moines, where the State Board of Control has purchased, at a cost of $188,160, a tract of 960 acres as a site. It will probably be two or three years before the colony will be in operation.

Sanatorium Notes.—The tuberculosis hospital being erected for Scott County in Davenport, at a cost of about $50,000, is almost completed.——Two buildings are to be erected by the state at the State Tuberculosis Sanatorium, Oakdale, at a cost of $85,000. The first will be a three-story structure to be occupied by patients in the advanced stages of tuberculosis; the second building will be used as a home for the medical and administrative officers.

Suit Involving Quarantine Regulations.—Prosecution to compel compliance with the health board regulations has begun at Mason City against James Irons, a prominent business man. A daughter of Irons had measles and the house was placarded, but not quarantined. At the termination of the case Irons refused to permit the fumigation of his house, or to take a formaldehyd bath, according to the requirements of the health board. The local health authorities have the assistance of Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, in attempting to uphold the health regulations.

KANSAS

State Society Meeting.—The annual meeting of the Kansas State Medical Society will be held in Wichita, May 6 and 7.

New Officers.—Northeastern District Medical Society at Kansas City, February 19: president, Dr. Edwin T. Shelly, Atchison; secretary-treasurer, Dr. Jacob L. Everhardy, Leavenworth.——Cloud County Medical Society at Concordia: president, Dr. Charles Stein, Glasco; secretary, Dr. Edwin N. Robertson, Concordia.

Personal.—Dr. R. Cecil Smith, Beloit, has gone abroad.—— Dr. Wilson R. Priest, Concordia, has succeeded Dr. Winfield O. Thompson, Dodge City, as a member of the State Board of Health.——Drs. Oliver S. Rich, Wichita, and Jonathan H. Winterbotham, Salina, have been appointed members of the State Board of Health.——Dr. Roscoe T. Nichols, Liberal, has been appointed student physician of the State Agricultural College, Manhattan.

MARYLAND

Bichlorid Tablet Bill.—The bill regulating the sale of bichlorid tablets which had passed the legislature and was ready for the governor's signature, has been returned to the senate and a new bill introduced which provides that the bichlorid tablets must be in an irregular shape, of a startling color and branded "poison."

Appropriations to Baltimore Hospitals.—The appropriation by the general assembly of Maryland to the following hospitals of Baltimore city are as follows: Maryland General Hospital, $16,000; Mercy Hospital, which must provide for one patient at a time from each senatorial district of the state, $22,500, and University Hospital, which must provide for one patient at a time from each senatorial district of the state and must satisfy the comptroller that it has done so, $20,000.

Report of the Health Department.—Of a total of 250 deaths in Baltimore last week, 46 were caused by pneumonia, according to a bulletin issued by Health Commissioner Gorter. During the same week of 1913, 239 persons died in the city from various diseases. The following contagious and infectious diseases were reported: Small-pox, 34; diphtheria, 24; scarlet fever, 18; typhoid fever, 1; measles, 14; mumps, 32; whooping-cough, 8; varicella, 24 and tuberculosis, 19. The total births reported were 314; white, 246; colored, 68; males, 160; females, 154.

Publicity To Be Discussed.—A public meeting is being arranged by the Baltimore City Medical Society. Leading physicians and newspaper men of this city will discuss the question of publicity and the medical profession. After the various ideas have been presented to the conference, it is proposed to have a debate and thresh out the problem into some form of agreement. The idea of harmonizing the opinions on medical publicity was suggested at a meeting held during the Health Conference of the Medical and Chirurgical Faculty at which the topic of publicity was a feature.

Physicians and Vaccine Ordinance.—Dr. Randolph Winslow, president of the Medical and Chirurgical Faculty, Dr. Thomas R. Brown, president of the Baltimore City Medical Society, and Dr. Hiram Woods appeared before the First Branch of the City Council and spoke in favor of the ordinance which gives the health commissioner and his deputies the power to examine a person to determine whether or not he has been vaccinated successfully. New cases of small-pox are being discovered every day and the situation is by no means yet in hand. With the twenty-four additional vaccine physicians at work, a thorough campaign is being undertaken by the health department to vaccinate every person needing it.

Settlement in the Sadler Case.—A verdict of $6,000 damages was obtained in the superior court by Mrs. Sally Stirling Sadler in her suit against Dr. George H. Riggs of the Riggs Cottage at Ijamsville, for alleged assault and unlawful detention in his sanitarium. The patient was admitted to the sanitarium on voluntary commitment for six months, and before the expiration of this time, she was certified to as insane by two physicians. Judge Bond granted an instruction to the jury asked by Alfred S. Niles and E. Walton Brewington, counsel for Mrs. Sadler, that the "uncontradicted evidence established that she was unlawfully confined and detained by Dr. Riggs against her will in his sanitarium, and the verdict should be for such amount as they may find under the instruction of the court."

MASSACHUSETTS

Evening Clinics.—The Boston Dispensary opened evening clinics for men, March 23. The clinics will be held every Monday, Wednesday and Friday evening at 7:30. This clinic is primarily for genito-urinary diseases and will be under the charge of the regular staff of the dispensary.

Robert Brigham Hospital.—The Robert B. Brigham Hospital, on Parker Hill, Boston, was informally opened March 15. The medical staff consists of Dr. Louis M. Spear, physician in chief; Dr. Francis H. McCrudden, laboratory director; Dr. Edward P. Richardson, surgeon; Dr. Charles F. Painter, orthopedic surgeon; Charles B. Lawson, assistant physician; William H. Miller, assistant surgeon; Lloyd T. Brown, assistant orthopedic surgeon.

NEW JERSEY

Burlington Fights River Pollution.—The State Board of Health and State Board of Water and Sewage back Burlington's fight to protect its drinking water from sewage pollution. The campaign of the State Board of Health to enforce the law against the pollution of the river from municipal sewer plants has been held up in the courts for seven years in the test case of the State of New Jersey vs. the City of Phillipsburg.

NEW MEXICO

Sanatorium Endorsed.—Chaves County Medical Society has unanimously endorsed a movement to secure for Roswell the sanatorium which the Methodist Episcopal Church, South, is contemplating building in the Southwest.

Personal.—Dr. John W. Colbert, Albuquerque, has been asked by the Rockefeller Foundation to assume charge of its research work in a campaign to be inaugurated for the eradication of hookworm disease in Central and South America.——Dr. M. M. Thompson, Logan, who suffered a fracture of the clavicle and other injuries by being thrown from a horse which he was breaking recently, has recovered.

Typhus Fever among Indians.—Under date of March 11, typhus fever was reported among the Pueblo Indians in the village of Canyon Cito Cojo, 40 miles west of Albuquerque. In all there were about fifteen cases, with two deaths. There are about 200 Indians in the settlement. The epidemic was reported by Dr. Lewis C. Day, physician at the local Indian school. Dr. Lucien G. Rice, chairman of the State Board of Health, instructed Dr. Walter W. Spargo, Albuquerque, to take charge of the situation. The sanitary conditions in the village are bad and vermin are plentiful.

NEW YORK

Personal.—Dr. Frederick W. Sears, health officer of Syracuse, has sailed for Europe.——Dr. Charles K. Winne, Jr., Albany, has been appointed medical assistant to the Bureau of Health.

Dental Dispensaries Approved.—The Board of Councilmen of Buffalo approved the action of the lower house in voting to provide $2,200 for the Health Department for the maintenance of two free dental dispensaries for the benefit of the public school children.

Medical Judge for Each County.—Under the terms of a bill presented to the senate by J. S. Seeley it is provided that each county in the state shall have a medical judge, who shall be a physician, with a salary of $3,500, and an allowance of $2,500 for expenses; that the duties of the medical judge shall be to attend all trials where medical evidence is given concerning the sanity of the defendant, and to advise the court and jury regarding the accuracy of the testimony.

Would Frame Its Own Health Code.—Members of the Rochester Health Commission desire to have the right to frame their own health code for the city, without interference from the State Health Council. The president of the commission, Dr. John W. Whitbeck, was authorized to attend the meeting of the State Health Council in order to present officially the request of the Rochester commission for exemption, and to ask the council to recommend such exemption to the senate and governor.

State Leases Ward's Island.—After several years' negotiations an agreement has been approved by New York state and the City of New York giving to the state a lease of Ward's Island for fifty years for the Manhattan State Hospital and transferring to the state the Long Island State Hospital, Brooklyn. The Manhattan State Hospital has been located on Ward's Island for many years without legal right, and during its occupancy of the island has spent $1,238,494 for improvements and repairs on buildings. The buildings and island are valued at $8,950,000. Under the terms of the lease the nominal rental of the property is one dollar a year for which the state is to reimburse the city by paying for such buildings as have been erected during the past ten years.

High Rural Death-Rate.—Grangers continue to call attention to the high rural death-rate in the state and to urge the passage of the Rural Hygiene Bill. They assert that had the death-rate in rural New York communities of less than 8,000 population been as low as that of New York City, 3,900 fewer persons would have died in the state. At a conservative estimate of $5,000 as the value of a human life the loss to the state for the year was $19,500,000. The bill provides for the creation of a division of rural hygiene in the State Department of Health, and offers the residents of rural New York the same protection which has reduced the city death-rate. Only $75,000 is asked for the bill, which it is pointed out is smaller than that spent by the state in experiments in roadmaking, forestry and other activities. The State Charities Aid Association is cooperating with the Grange in the effort to obtain this legislation.

New York City

Gold Medals for Jacobi and Osborn.—The National Institute of Social Sciences held a meeting at the New York Academy of Medicine on March 20, on which occasion gold medals were awarded to Dr. Abraham Jacobi and Prof. Henry Fairfield Osborn.

Railroad Employees Must Be Vaccinated.—Two cases of small-pox have been found among the employees of the Pennsylvania Railroad within a week. This has led Commissioner Goldwater to issue an order directing every employee of the Pennsylvania road on trains entering New York City to be vaccinated.

Personal.—Dr. Walter B. James has sailed for Madeira and the Mediterranean.——Dr. Thomas Darlington, formerly health commissioner of New York City, has been appointed a member of the Workmen's Compensation Commission.——Dr. T. Mitchell Prudden has been appointed a member of the State Public Health Council.

Montefiore Home Report.—The twenty-ninth annual report of the Montefiore Home for Chronic Invalids, which has removed to its new buildings during the past year, shows that 1,083 patients were provided for during the year, and that 472 remain under treatment at the end of the year. All save forty-three received free treatment. The receipts of the institution for the year from all sources amounted to $205,328 and the expenditures almost equaled that amount.

NORTH CAROLINA

Personal.—Dr. W. Thomas Parrott, Kinston, fractured his arm and two ribs while attempting to crank his motor-car near Kinston, and is under treatment at the McDaniel Memorial Hospital.

Democrats Yield to State Society.—The North Carolina Democratic executive committee arranged for the state con-

vention at Raleigh, June 17, the date on which the Medical Society of the State of North Carolina was to hold its meeting at Raleigh. The hotels of Raleigh protested that they could not entertain both bodies at the same time, and the committee courteously arranged to hold the political convention at a later date.

OHIO

Mouth Hygiene Campaign.—On the third day of the Mouth Hygiene Campaign in Cleveland, more than $18,000 toward the $75,000 desired was reported to have been subscribed.

Betterment of Insane.—A society was organized in Dayton, March 12, known as the "Friends of the Insane," which has for its object the betterment of the insane. Connecticut, Massachusetts, Maryland, New York and Illinois are said already to have organizations of this kind.

Personal.—Dr. Charles A. Teeters, Washington, has been appointed coroner of Fayette County, vice Dr. Luther P. Howell, resigned.——Dr. Samuel S. Wilson, Xenia, announces his approaching retirement from the practice of medicine, in which he has been engaged for thirty-four years.——Dr. Charles W. Maxon, Steubenville, is reported to be seriously ill with typhoid fever.

Card Index of Physicians.—According to the *Ohio State Medical Journal* for February the State Medical Board is establishing a new card index system for registration records which will greatly improve and amplify its data. In addition to the usual data regarding place of graduation, location, etc., as required by the practice law, notation will be made of distinguished service to the profession, such as publication of medical works, research work, inventions, etc. Likewise records will be kept of adverse happenings, matters of unprofessional conduct, advertising, etc., so that the records will contain much pertinent and useful information about Ohio physicians.

Pay Patients in City Hospital Should Have Own Physicians.—At a meeting of the Cleveland Academy of Medicine, March 20, a resolution was introduced setting forth that there was in the city but one hospital for receiving and caring for contagious diseases; that all patients sent to the hospital received free medical service; that no patient, under existing conditions, can have a choice of physicians; that this ruling causes injustice to the physicians of Cleveland, and is unfair; and resolving that the authorities in charge of the Cleveland City Hospital be asked to open the contagious disease department to pay patients, and that such patients be allowed to have their own physicians.

OKLAHOMA

Personal.—Dr. James E. Webb, Tulsa, has been appointed City Superintendent of Health, vice Dr. Daniel U. Wadsworth, resigned.——Dr. Albert H. Herr, Okmulgee, has resumed practice after a severe attack of typhoid fever.——The office equipment of Dr. Ollie E. Clements, Hastings, was recently destroyed by fire.——Dr. Richard M. Counterman, Stigler, was severely injured in a runaway accident recently.

Hospital Notes.—The State Board of Education, on the recommendation of the president of the Oklahoma University, has recommended that the State Hospital, Oklahoma City, be opened to all reputable practitioners of medicine.——Dr. Frederick P. Von Keller and Dr. J. F. Son, Ardmore, have opened a hospital to be known as Rose Croix Hospital.——The new City Hospital, Clinton, was formally opened February 25. It will be in charge of Dr. McLain Rogers.

New Officers.—Cole County Medical Society: president, Dr. Walter E. Brown, Lehigh; secretary-treasurer, Dr. Jesse J. Hypes, Phillips.——Craig County Medical Society: president, Dr. James W. Craig; secretary-treasurer, Dr. Frank L. Hughson, both of Vinita.——McCurtain County Medical Society: president, Dr. James S. Denison, Garvin; secretary-treasurer, Dr. Addie W. Clarkson, Valliant.——McLain County Medical Society: president, Dr. George S. Barger; secretary-treasurer, Dr. Ora O. Dawson, both of Wayne.——Latimer County Medical Society, at Wilburton, March 9: president, Dr. Harry L. Dalby; secretary-treasurer, Dr. Tillie L. Henry, both of Wilburton.

PENNSYLVANIA

Appropriation for Sanatorium.—Berkes County has appropriated $1,000 for the Neversink Mountain Sanatorium.

Health Talks.—The last of the series of health lectures, given under the auspices of the Allegheny County Medical Society, was given at the East Liberty Branch of the Young Men's Christian Association, Pittsburgh, March 31, by Dr. Adolph Krebs on "The Care of the Eyes and Prevention of Blindness."

Alumni Banquet.—The ninth annual banquet of the Pennsylvania Branch of the Alumni Association of University of Maryland was held in Philadelphia March 19. The following officers were elected for the ensuing year: president, Dr. W. H. Lowell, Lancaster; vice-president, Dr. R. V. White, Scranton, and secretary-treasurer, J. C. C. Beale, Coaldale.

Small-Pox Isolated Town.—The town of Billmyer, between Lancaster and Columbia, has been isolated by the state health officials because of the prevalence of small-pox. The quarantine will last for twenty-eight days. The Pennsylvania Railroad has announced that the sale of tickets to Billmyer has been discontinued, and that trains will not stop there for the present.

Rittersville Fights Diphtheria.—A strict quarantine has been established at the Rittersville Hospital to prevent a spread of diphtheria at that institution. A woman patient, on a visit to her home, contracted the malady. An entertainment has been canceled, and for the present there will not be any religious services, no visitors will be allowed, no new patients received and none discharged.

New Societies.—The physicians and dentists of the lower Allegheny Valley have reorganized the Allegheny Valley Branch of the Allegheny County Medical Society, and have elected Dr. John W. Goodsell, president, and Dr. Albert S. Kaufman, secretary, both of New Kensington.——The Hygienic Section of the Pittsburgh Academy of Science and Art was organized March 10, and Surgeon James B. Stoner, United States Public Health Service, was elected president.

Norristown to Fight Scarlet Fever.—With the number of cases of scarlet fever increasing, the Norristown Board of Health, March 18, decided to stamp out the disease by employing doctors to visit every child absent from the various public and private schools to ascertain the cause of illness rather than by closing the schools. There have been seventy-eight cases reported since the first of the year, and the health officer believes that parents are taking chances rather than be quarantined.

Railroad Demands Strictly Temperate Employees.—The Pennsylvania Railroad has a strict rule, which is rigidly enforced. It reads: "The use of intoxicants by employees while on duty is prohibited. Their habitual use or the frequenting of places where they are sold is sufficient cause for dismissal." In a statement issued March 19, the company gave the information that 784,670 observations were made during 1913 as to the use of intoxicants by employees, and that in only 158 cases was discipline required.

Personal.—Dr. Ellis M. Frost, Pittsburgh, instructor in the division of clinical medicine and microscopic anatomy in the School of Medicine of the University of Pittsburgh, has been appointed director of the Department of Health of the university, to date from February 15. The department planned to lay great stress on the preventive side of student life disease. A suite of rooms has been equipped in the Tree gymnasium, where the director will have daily office hours for consultation by the students.——Dr. Raymond A. Dangler, Gilberton, has been appointed medical examiner of the Lehigh Valley Railroad.——Dr. Clarence R. Phillips, Harrisburg, has been appointed State Health Inspector for Dauphin County.

Philadelphia

Plans for Clean-Up Week.—On March 19 a meeting of the citizens committee was held at the mayor's office for the purpose of forming plans for a city-wide clean-up week, from April 20 to 28, which will reach every person living in this city.

Monod in Philadelphia.—Dr. Gustave Monod, Paris, commissioned by the French government to report on postgraduate teaching in America, delivered an address, March 27, at a special meeting of the College of Physicians of Philadelphia on "Post-Graduate Study in Paris."

Medical Students Certified as Interns.—Sixty medical students to be graduated from the city's medical schools this spring were certified by the Civil Service Commission as successfully passing the examination qualifying them for appointment as intern at the Philadelphia General Hospital, as vacancies occur.

Rush Society Lecture.—The eighth Rush Society Lecture, which is also the annual address to the Undergraduate Medical Society of the University of Pennsylvania, will be delivered in Lecture Room B of the New Medical Laboratory of the

university, April 1, at 3:30, by Dr. Alexis Carrel of the Rockefeller Institute for Medical Research, on "Permanent Active Life of the Tissues Outside the Organism."

Conference on the Wrapping of Bread.—At another conference, March 18, of the representatives of the Women's Civic Organizations with the acting head of the Health Department, Director Wilson, and State Dairy and Food Commissioner Faust, it was found that while paper wrapping on bread was a public need, the law was not specific enough to force its use. No successful prosecution could be conducted under the present law where bread was sold without a wrapper, because it was impossible from a chemical and bacteriologic point of view to prove that bread was contaminated by handling.

Meat Men Must Obtain Licenses.—The division of meat inspection of the Department of Health has issued a warning that vendors of and dealers in meat and fish must make immediate application for licenses or be prosecuted. Nearly three thousand have been tardy in this respect. Every year many dealers, such as hucksters and street vendors, try to elude this law, so a special crusade will be made against these men. No licenses have been issued to the members of the Jewish Poultry Slaughters Association, comprising about fifty men, and none will be issued until arrangements have been made for sanitary slaughter-houses.

Personal.—Dr. Alexander C. Abbott, Professor of Hygiene and Bacteriology at the University of Pennsylvania, delivered a course of three lectures on the "Control of Contagious Diseases" before the United States Army Medical School, in Washington, D. C., on March 16, 17 and 19.——Dr. William H. Walsh, medical superintendent of the Philadelphia Hospital for Contagious Diseases, has succeeded the late Dr. Henry Sykes as chief resident of the Philadelphia General Hospital. ——Dr. James R. Martin has been appointed assistant orthopedic surgeon to the Outpatient Department of the Jewish Hospital.——Dr. Joseph F. Neff, director of the Department of Public Health and Charities, who has been ill for three months, has returned to Philadelphia and resumed practice, March 17. ——Dr. J. William White has returned from a trip to the Orient.——Dr. J. Monroe Campbell has been appointed chief of the division of the biologic products of the State Board of Health at Harrisburg.

TEXAS

County Health Officer Not a Salaried Position.—The attorney general's department rendered a decision that county commissioners are authorized to pay county health officers only for services actually performed, and that no regular salary can be given them.

Clean-Up Day.—March 10 was officially observed as Clean-Up Day throughout the state. In the official proclamation announcing this, Dr. Ralph Steiner, Austin, State Health Officer, asked all health societies, state and county authorities and women's clubs to observe the day and rid the state of filth and its products.

Small-Pox on the Border.—On account of the great influx of Mexicans into southwestern Texas because of the revolution in Mexico, small-pox has been very prevalent, and the local health authorities along the border have set on foot a movement to induce the federal government to have the Army medical authorities along the border vaccinate all Mexicans arriving in the state. The local health authorities will also ask the cooperation of the State Board in combatting small-pox.

Personal.—J. F. Bailey, Waco, has succeeded J. H. Evans, deceased, as president of the Texas Board of Medical Examiners.——Dr. Charles W. Truehart, Galveston, a veteran physician of Texas, who has recently moved to San Antonio, has been made an honorary member of the Bexar County Medical Society.——Dr. Joseph H. Reuss, Cuero, chief surgeon of the San Antonio and Aransas Pass Railway, has been provided by the railroad with a motor-car for his personal use.——Dr. Ervin P. Hall, Fort Worth, was operated for appendicitis at the St. Joseph's Infirmary in that city.

New Officers.—Milan County Medical Society at Cameron, March 10: president, Dr. Hiram F. Coulter, Rockdale; secretary, Dr. Green Taylor, Cameron.——Jim Wells County Medical Association organized at Alice, March 3: president, Dr. J. S. Strickland; secretary-treasurer, Dr. M. J. Perkins, both of Alice.——Bowie County Health Society, organized at Texarkana, February 26, for the purpose of securing a county hospital: president, Dr. Lucien H. Lanier; secretary, Dr. J. K. Smith, both of Texarkana.——Scurry County Medical Society, reorganized at Snyder recently: president Dr. William R. Johnson, Snyder; secretary, Luther E. Trigg, Hermleigh.

Hospital and Sanatorium News.—The Bexar County Medical Society, at its meeting, March 12, adopted a resolution endorsing a city and county hospital.——The Harris Sanatorium for Tuberculosis has been opened in San Antonio.——By unanimous vote of the county officers, the Physicians' and Surgeons' Hospital, Dallas and Reynolds Streets, San Antonio, has been purchased for Bexar County for $75,000. It is contemplated to add a wing to the building at a cost of $5,000. The building will be known as the Bexar County Hospital, and will be under the care of Dr. Dabney Berrey, county health commissioner. ——The McClinnon County Medical Society has asked the county officers to order bonds for $20,000 to procure a county hospital.

UTAH

New Officers.—Utah County Medical Society at Provo: president, Dr. Lyon D. Stewart, Payson; secretary-treasurer, Dr. Herbert S. Pyne, Provo (reelected).

State Board Appointments.—The governor has reappointed Dr. William R. Calderwood, Salt Lake City, a member of the State Board of Health, and has appointed Dr. Claude E. McDermid, Sunnyside, a member to succeed Dr. David O. Miner, Nephi, removed from the state.

Personal.—Dr. Hardie Lynch, City Bacteriologist of Salt Lake City, was operated on for appendicitis at St. Mark's Hospital recently.——Dr. Carlyle K. MacMurdy, Ogden, has returned after an absence of several months in New York City.——Dr. Eugene H. Smith and family, Ogden, have returned from Europe.

WEST VIRGINIA

Medical Society Organized.—The Cabell County Medical Society was incorporated at Huntington recently, with a capital stock of $500, by Drs. Frederick A. Fitch, James R. Bloss, Lindsey J. Vinson, A. Kenton Kessler and William E. Neal, all of Huntington.

Dispensary Staff Appointed.—The following officers and physicians are in charge of the dispensary of the Ohio County Antituberculosis League: J. Edward Burns, John W. Gilmore, Robert U. Drinkard, Charles M. Truschel, Thurman Gillespy and Aron V. Weinberger, all of Wheeling.

Red Cross Chapter Organized.—At a meeting held in Wheeling recently, a chapter of the American National Red Cross was organized, with an additional membership of 100. Dr. Charles A. Wingerter was elected a vice-president and Dr. Eugenius Hildreth II a member of the executive committee.

Personal.—Dr. Theodore K. Oates, chief surgeon of the Martinsburg City Hospital, has been appointed a member of the surgical staff of the Baltimore and Ohio Railroad.——Dr. Louis D. Wilson has been appointed dean of the medical staff of the new Ohio Valley General Hospital, Wheeling.——Dr. Asahel C. Lambert, Red House, has opened a hospital at Charleston.

WISCONSIN

New Officers.—Jefferson County Medical Society at Fort Atkinson, February 27: president, Dr. Charles S. Carmichael, Helenville; secretary, Dr. Carl R. Feld, Watertown.

West Allis Sanatorium.—Land for the West Allis Hospital will soon be broken. The central building and one wing will be built at present at a cost of $24,000 and will accommodate forty patients.

More Land for Sanatorium.—The joint committee of the common council on finance and buildings and grounds has recommended the purchase of 15 acres of land for an addition to the Blue Mound Sanatorium for Tuberculosis.

State Board Dispenses Nitrate of Silver.—The State Board of Health, March 18, sent out 3,000 packages of nitrate of silver, each containing 24 ampoules, to physicians in the state. This has been done under the law passed by the last legislature which provides that the eyes of new-born children must be washed at birth with nitrate of silver solution to prevent blindness.

GENERAL

Health Conference in Southern States.—On April 24 there will be held in New Orleans a conference of the health and educational officers of the Southern states under the auspices of the Louisiana State Board of Health. The conference will consider especially the formulation of a plan for concerted action for the betterment of health conditions and the eradication of tuberculosis among negroes. Efforts are being made to secure special railroad rates, and further information will appear later.

Control of Cancer.—On April 11, at 11 a. m., Mr. Frederick A. Hoffmann, statistician of the Prudential Insurance Company, will deliver a lecture in the Hudson Theater, New York City, under the auspices of the American Society for the Control of Cancer, on "The Menace and Control of Cancer."

Dining-Car Employees Inspected.—By order of the St. Louis and Southwestern Railway, all employees connected with the dining-car service of the road were inspected, with the result that one, found to be suffering from a communicable disease, was removed from the service.

Insurance Items.—The Equitable Life Insurance Company of New York announces that beginning July 1 it will hold free examinations for policy-holders at central points where it has salaried physicians.——A group of Lloyd underwriters has fixed a premium of $5 for policies against appendicitis, covering all claims for expenses up to $500.

Medical Mission Propaganda.—The Medical Mission Propaganda, under the auspices of the Catholic Foreign Mission Society has been founded to establish and support medical mission work in the Far East. The primary endeavor is to support and encourage existing missions and to disseminate suitable medical literature and gratuitous medical supplies, and later to establish dispensaries and hospitals. Physicians, nurses and others who would like to assist are requested to communicate with "Physician," care *Field Afar Magazine*, Ossining P. O., N. Y.

Bequests and Donations.—The following bequests and donations have recently been announced:

Washington University Medical School, St. Louis, $150,000, by the will of Adolphus Busch.

Women's Medical College of Pennsylvania, Philadelphia, a donation of $10,000, by an anonymous benefactor.

Infants' Hospital, in connection with the Thomas Morgan Rotch Jr., Memorial Hospital, Boston, the income from the largest part of the estate of Dr. Thomas Morgan Rotch, after the death of his wife.

Thomas Morgan Rotch professorship in Pediatrics at Harvard Medical School, established by the will of Dr. Thomas Morgan Rotch.

The German Hospital and St. Catherine's Hospital, New York City, each $5,000 by the will of Louis Bossert.

Hospital for Diphtheria and Scarlet Fever, New York City, $15,000 by the will of Mrs. John W. Minturn.

Presbyterian Hospital, New York City, $40,000 for the endowment of free beds, by the will of Mrs. Minnie Hackett Trowbridge.

FOREIGN

In Honor of Ehrlich.—The last number of the *Münchener med. Wochenschrift* is a special issue in honor of the sixtieth birthday of Professor Ehrlich, March 14. All of the numerous articles, with one exception, are on experiences with salvarsan, looking back over the three years since it was introduced.

Plague on the West Coast.—According to the report of the Department of Sanitation of the Canal Zone for January, plague conditions on the west coast of South America are worse than they had been at any time during the previous three years. Plague has extended up the coast from Guayaquil, and all Ecuadorian ports are said to be infected. A number of cases of plague occurred at both Bahia and Manta. The latter port is within two days' sail of Panama. At Guayaquil, although there was a slight diminution in the number of cases, the plague situation remained bad and yellow fever had increased. Plague is also reported to have increased in all the ports of Peru and also in Iquique, Chile. Plague conditions at Brighton, Trinidad, had improved. Only one new case of yellow fever appeared at Trinidad during the month.

CANADA

Tuberculosis Convention.—The fourteenth annual convention of the Canadian Association for the Prevention of Tuberculosis will be held in Halifax, N. S., July 13 and 14, following the meeting of the Canadian Medical Association at St. John, N. B.

Personal.—Dr. A. L. C. Gilday, Montreal, has returned from England and the continent.——Dr. George A. Morphy, Montreal, has gone to the Mediterranean.——Dr. Fred Pelletier, Montreal, has been appointed secretary of the Montreal Board of Health.

Hospital News.—The Alexandria and Marine Hospital, Goderich, Ontario, will receive a grant from the town of $15,000 to fit up and enlarge and equip the present building.——The federal government will consider establishing a new marine hospital and house of refuge for sailors at Iverhuron, Lake Huron.

Sanitary Inspectors Organize.—The Association of Sanitary Inspectors of Western Canada was formed April 19, 1913, in the city of Winnipeg. It now has a membership of eighty-seven, nearly all in active service as inspectors from Fort William to the Coast. The next annual meeting will be held in Winnipeg in July.

Leper in Winnipeg.—A leprosy patient was discovered in Winnipeg two weeks ago. He had been in the city three weeks, and had come from Saskatchewan. He is housed temporarily in an isolated building near the Winnipeg General Hospital. The health authorities of Saskatchewan have been asked to arrange for deporting from Manitoba. He will probably be sent to one of the government lazarettos.

Medical Inspection of Schools in Montreal.—This is under the direction and control of the Board of Health. Up to the present time there have been nineteen districts with a medical inspector in charge of each district. Each medical inspector receives a salary of $1,400 per annum for work from 9 a. m. to 5 p. m. There are 254 schools, with 85,000 pupils. Each medical inspector has an average of thirteen schools. Through medical inspection pediculosis and scabies have almost disappeared, and there has been a great diminution of contagious diseases. It is likely, under the reorganization of the department of health now in process, that the medical inspectors will devote all their time to the work on increased remuneration, and that the number of school nurses will be increased from seven to fifteen or more.

Syphilis in Toronto.—The subject of syphilis was recently discussed by the sections of Medicine and State Medicine in the Academy of Medicine, Toronto. Dr. Joseph S. Graham reported that in the Toronto General Hospital from Aug. 11 to Dec. 13, 1913, there were treated a total of 412 patients; and it was proved by the Wassermann reaction that 180 had syphilis. Dr. Robert W. Mann gave records of cases in St. Michael's Hospital for three months. Of 286 public ward cases, 158 men gave 57.5 per cent. positive reaction and the women 64.5 per cent. Drs. Gordon S. Bates and George S. Strathy reported on 1,200 patients on whom they had made the test. These cases were taken from the Hospital for Sick Children, Toronto, and the Hospital for Feebie-Minded, Orillia, Ontario. At the Children's Hospital they tested and found positive the parents of thirty-seven suspected syphilitic children, twenty-five giving no history of syphilis. At the Orillia Institution 100 patients were tested; three were positive. Thirty defective children were tested at the Children's Hospital; no reaction except two juvenile paretics. From their work they come to the conclusion that syphilis plays but a small part in feeble-mindedness. Altogether they found positive results in 453 cases not infected innocently; 100 of these were from the Toronto Hospital for the Insane and seventeen from the Hospital for Incurables. In the Hospital for the Insane, ninety-five were cases of general paralysis.——In the Toronto Hospital for Insane, in 1910, forty-one cases of paresis were admitted, 13.66 per cent. of total admissions; in 1911, thirty-seven cases, 11.85 per cent. of total admissions; 1912, twenty cases, 6.09 per cent.; 1913, thirteen cases, 3.73 per cent. In 1910 paretics formed 25.6 per cent. of total male admissions; female, 2 per cent.; in 1911, 19.4 per cent. of male admissions; female, 4 per cent.; in 1912, 8.3 per cent. of total males; female, 3.3 per cent.; in 1913, 6 per cent. of total male; female, 1.7 per cent. of total female admissions.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, March 6, 1914.

The Pains of Death

A curious correspondence has been going on in the *Times* on the subject of "The Pains of Death." Of course that dying is a painful process is a popular and not a medical belief. The difficult breathing often present in the dying suggests to the anxious friends a struggle which must be painful. They overlook the fact that the accompanying asphyxia produces stupor which ends in coma. Several lay correspondents have written to the *Times* stating the experiences of friends who reached an advanced stage of asphyxia and yet recovered to assure them that they suffered no pain. One eminent member of the profession, Sir Henry Morris, ex-president of the Royal College of Surgeons, has made a very practical suggestion which, though not new, is not so well known as it should be. He points out how easy it is to relieve the difficult breathing witnessed in many conditions such as heart-failure, apoplexy, compression of the brain, cancer causing fixation of the chest wall or involving the glands of the neck, drowning, some cases of chloroform poisoning, and regurgitation of some of the contents of the stomach in persons unconscious. The noisy snoring or stertorous

breathing in these conditions is the immediate result of a local mechanical condition—palsy of the short palate, falling back of the tongue over the top of the pharynx, or the presence of mucus or other fluids in the larger air-tubes. This condition may be changed to the great relief of the distressed friends, and sometimes to permanent recovery, by turning and keeping the patient on one side; when paralysis exists the paralyzed side should be downward. The lateral posture permits the tongue to come forward and to one side. If the chin is dropped it should be held up. The lateral posture also allows mucus or other fluids to escape between the lips as well as to gravitate into and fill up the lower lung, to the great relief of the upper lung, whereby quiet respiration can be carried on. The lung is not permanently injured by remaining inactive and filled with mucus or water for a considerable period, but there is great danger in reversing the sides and thus allowing the fluid to cross from one lung to the other. Sir Henry Morris thinks that in some cases of apoplexy patients have died by suffocation from being kept on their backs rather than from the damage to the brain, and that had they been placed and kept on the paralyzed side and respiration thus facilitated, the brain injury would have had time to become repaired and the patients might have recovered. These facts were first pointed out in a communication to the Royal Medical and Chirurgical Society by the late Dr. Robert L. Bowles, and were published in the *Transactions* of the society in 1860.

The Royal Commission on Venereal Diseases

At the seventeenth meeting of the Royal Commission on Venereal Diseases, evidence was given by Dr. S. Coupland and Dr. C. H. Bond, commissioners in lunacy. They stated that since 1876 there had been a gradual rise in the proportion of syphilitics admitted to asylums, but it could not be inferred that this denoted increasing prevalence of syphilis. It might be due to better diagnosis. Throughout the whole period there had been a preponderance in the proportion of male cases in the private over that in the pauper class, and generally a similar preponderance in females of the pauper class over the private. For the period 1908-1912, of the male admissions 11.8 per cent. of the private and 8.7 per cent. of the pauper cases were syphilitics; for females the corresponding figures were 0.7 and 1.4 per cent.

At the eighteenth meeting Sir Thomas Barlow, president of the Royal College of Physicians, dealt with the importance of congenital syphilis as a hindrance to the birth-rate and to healthy development. The life of congenitally syphilitic children at school, especially among the humbler classes, was most unpromising, and many of them became useless members of society. They were liable to convulsions, which might inaugurate serious disease of the brain. The ideal method of treatment given a syphilitic infant would be that both parents should be under supervision and medical inspection at frequent intervals, and other children subsequently born should be inspected at frequent intervals for several years. It was very difficult to estimate whether venereal diseases were less prevalent than formerly; but apparent general improvement in morality in time ought to produce a diminution of the diseases. Special education was desirable. Special teaching on sexual conditions to women had been given in Western Canada without any offense whatever. Sir Thomas was not in favor of notification. There was much more hope from general enlightenment and facilities for effective treatment in the early stages. He also advocated strongly the subsidization by the government of pathologic research.

The Biology of the Rat-Flea

Owing to the importance the common rat-flea of Great Britain has assumed in the importation of plague, it has been the subject of investigation, under government auspices, by Mr. Strickland, who has made a careful study of its life and habits. The eggs hatch out after an incubation period of from five to fourteen days. This period is little influenced by variations of temperature or humidity. On the other hand, the larva lives best in moist surroundings, as does the unfed adult imago. A comparatively low temperature is also advantageous. The larvae feed on excrement or blood indiscriminately. At this stage light is deleterious and proves rapidly fatal. Under favorable conditions the pupal stage lasts seventeen days, but may be prolonged for months. It is prolonged by cold. It was found that the flea would readily feed on man, even more readily than on the rat, but, curiously, not till the flea has fed on rat's blood can copulation and oviposition take place. Rat's blood therefore seems to contain a substance stimulating to the sexual organs of the flea. When unfed the animal will live for at least seventeen months in rubbish. In the absence of rubbish it will live at the longest for about a month.

PARIS LETTER

(*From Our Regular Correspondent*)

PARIS, March 6, 1914.

Alcoholism and Mortality

M. Henri Schmidt, deputy from the Vosges and president of the society known as "L'Alarme," which, as explained in THE JOURNAL, Feb. 28, 1914, was formed to combat alcoholism, has published an interesting article in which he shows the influence of alcoholism on mortality. The mere examination of the tables of the consumption of alcohol by departments and the distribution of deaths from tuberculosis shows clearly that alcoholism is an essential factor among all the other causes. It is the non-alcoholic regions of France which show the smallest number of deaths from tuberculosis (1.95 per thousand inhabitants for the years 1906, 1907 and 1908). The west, in which there is a heavy consumption of alcohol, gives the proportion of 2.61 per thousand, and the maximum (4.54) is given by the Parisian region in which the influence of alcohol is supplemented by those of unhealthful housing and a fatiguing life.

From other causes there are more deaths in the west than in the non-alcoholic regions, both in the city and in the country. Infant mortality is particularly high in the west owing to various causes: hereditary weakness, insufficient maternal care and bad food. Alcohol is sometimes put in the nursing-bottle. It is in Normandy that the greatest number of alcoholic women is found. The infant mortality was about 11.6 in 1906 in le Gers and about 22.2 in the Seine-Inférieure. It is also in the regions where there is a heavy consumption of alcohol and absinthe that the largest portion of still-births occur. Schmidt has calculated the following average for the period 1874-1904:

DEATHS FOR EACH THOUSAND CONCEPTIONS

	1874-1884	1885-1894	1895-1904
Non-alcoholic region	3.43	3.65	3.80
Alcoholic region	4.33	4.66	4.46
Southern departments (absinthe)	4.99	5.41	5.69

Operation on a Xiphopagus

Dr. Le Filliâtre has just operated successfully on a xiphopagus, Suzanne-Madeleine. The little girls were three months and four days old and in perfect health. Their combined weight was 6.5 kg. (14 pounds). Local anesthesia was used, 4.5 mg. of cocain being injected in four injections of a 1:500 solution. The connecting bridge of tissue, having been painted with tincture of iodin, was severed. As the previous Roentgen-ray examination had indicated, there was no intestinal connection. There was, however, a communicating strip of liver-tissue which had to be crushed. A portion of intestine of one of the infants, covered with perito neum, made a hernia in the abdomen of her sister.

Salvarsan for the Treatment of Tuberculous Syphilitics

The use of salvarsan and neosalvarsan for tuberculous syphilitics was the subject of an interesting discussion at the last two sessions of the Société médicale des hôpitaux de Paris. Dr. Jeanselme, *agrégé* professor, with Drs. Vernes and Bloch, reported thirteen cases of syphilis in tuberculous patients treated by injections of salvarsan. There was no hemoptysis in any of the patients no matter how advanced the lesions. The treatment did not hasten or aggravate the lesions. It even seemed to be efficacious for tuberculosis of the first and second stages. Jeanselme believes that in syphilitics affected with chronic pulmonary tuberculosis, provided that they are not in the cachectic period, injections of very small doses of salvarsan constitute the treatment of choice. On the other hand, this treatment should not be used for patients affected with rapidly progressing tuberculosis.

Dr. Leon Bernard, *agrégé* professor, with Dr. Paraf, gave injections of neosalvarsan to eight tuberculous syphilitics with no unfavorable results. Four patients were non-cachectic tuberculous patients with cutaneous or nervous syphilitic manifestations. In these four the effects of the treatment were excellent, both on the syphilitic lesions and on the general condition and the evolution of tuberculosis. Another case was one of cachectic tuberculosis with cavities. The neosalvarsan improved the syphilitic manifestations without modifying the course of tuberculosis. The other cases were cases of old syphilis in tuberculous patients with cavities. Not one of these was improved by the arsenical treatment.

According to Dr. Sergent, many cases of tuberculosis among syphilitics are hybrid lesions, half tuberculous and half syphilitic.

This explains the good effects of salvarsan in some patients, for this drug reduces the syphilitic element in the lesions without affecting the actual tuberculosis element.

Treatment of Arterial Hypertension by Irradiation of the Adrenals

At the last session of the Société médicale des hôpitaux de Paris, Drs. Cottenot and Sergent reported observations on eleven patients with hypertension who were treated by Roentgen rays on the adrenals, all other treatments being suspended meanwhile. In ten of these cases there was a lowering of pressure following the irradiations. Seven were cases of pure hypertension with no renal lesions or vascular sclerosis. In these patients the irradiation gave the most remarkable results, lowering the tension 4 or 5 cm. Four others had albuminuria and sclerosis. Three were benefited by the treatment, but less than the first cases. In the fourth there was no results. Thus it seems that adrenal irradiations are indicated for pure hypertension, or when the diminution of the renal permeability is very slight. They constitute a causal treatment of hypertension.

Marriages

CLARENCE JACKSON LAWS, M.D., Princeton, Mo., to Miss Bessie Strang of Kansas City, Mo., at Princeton, February 24.

HANS CHRISTIAN JORGENSON, M.D., to Miss Alice Elizabeth Coulthurst, both of Salt Lake City, Utah, February 25.

ARTHUR MCCOWAN, M.D., Vancouver, Wash., to Miss Jean Bagnell of Portland, Ore., at Vancouver, March 7.

EDWARD S. O'BRIEN, M.D., to Mrs. Frances L. Hartley, both of Merced, Cal., at Berkeley, Cal., March 10.

OLIVE FRANCES HUGHES, M.D., and Mr. Emil Kocher, both of Elgin, Ill., February 26.

Deaths

Benjamin Grigsby Copeland, M.D. Jefferson Medical College, 1883; a member of the Medical Association of the State of Alabama; one of the founders of the Birmingham Surgical Society; formerly proprietor of the Copeland Private Infirmary, Birmingham; and surgeon to the Hillman Hospital; professor of surgical anatomy and clinical surgery in Birmingham Medical College; local surgeon to the Alabama Southern, Birmingham Southern, and Southern Railway systems; died at his home in Birmingham, March 11, from tetanus, aged 53.

Moreau Roberts Brown, M.D. University of Louisville, Ky., 1876; of Chicago; emeritus professor of laryngology and rhinology in the Chicago Policlinic; formerly professor of laryngology, rhinology and otology in the College of Physicians and Surgeons, Chicago; a member of the Illinois State Medical Society; a Fellow of the American Laryngological Association; Medical Director of the National Union; a prominent specialist on diseases of the throat, nose and ear; died at his home in Winnetka, Ill., March 20, aged 60.

John Laing, M.D. College of Physicians and Surgeons, New York City; 1884; a member of the Medical Society of New Jersey; president of the New Jersey State Sanitary Association; consulting surgeon to the Paterson Hospital; examiner in hygiene to Rutgers College; for many years president of the Paterson Board of Health; and sanitary advisor of the East Jersey Water Company; an authority on water supply; died in St. Joseph's Hospital, Paterson, March 13, from diabetes, aged 55.

Henry A. Grim, M.D. University of Pennsylvania, Philadelphia, 1855; a member of the American Academy of Medicine; formerly surgeon of the Fifth, Thirty-fourth, Twelfth, and Forty-first Pennsylvania Volunteer Infantry; and later chief surgeon of the First Division of the Army of the Potomac during the Civil War; died at his home in Allentown, Pa., March 8, from cerebral hemorrhage, aged 82.

Marcus Morton Johnson, M.D. New York University, New York City, 1877; a fellow of the New York Academy of Medicine; formerly proprietor of the Woodland Sanitarium; surgeon to St. Joseph's Hospital, Hartford; from 1879 to 1900, surgeon to the Governor's Foot Guard; president of the Hartford Medical Society in 1911; founder and first president of the Hartford Free Dispensary; died in St. Francis' Hospital, Hartford, March 15, aged 69.

William C. Willeford, M.D. Medical College of Indiana, Indianapolis, 1881; of Marion, Ill.; formerly president of the Daviess County (Ind.) Medical Society; local surgeon for the Chicago and Eastern Illinois Railway; died at the home of his son in Indianapolis, January 2, from cerebral hemorrhage, aged 64.

William Whatley Battey, M.D. Medical College of Georgia; Augusta, 1873; a member of the Medical Association of Georgia; formerly lecturer on diseases of women and children in, and president of the Alumni Association of his Alma Mater; died at his home in Augusta, March 12.

Cyrus G. Fletcher, M.D. Pulte Medical College, Cincinnati, 1881; formerly of Erie, Kan.; but for twenty years a practitioner of North Yakima, Wash.; died in Erie, Kan., March 5, from the effects of hydrocyanic acid, believed to have been self-administered with suicidal intent, aged 63.

James F. Gardner, M.D. Western Reserve University, Cleveland, Ohio, 1864; assistant surgeon of the Tenth Ohio Volunteer Cavalry during the Civil War; and later district pension examiner; died at his home in West Brookfield, Ohio, March 9, from arteriosclerosis, aged 77.

James Black Merritt, M.D. University of Vermont, Burlington, 1879; for four years physician to the Talbot County Almshouse; of Easton, Md.; died in the Church Home and Infirmary, Baltimore, March 8, from carcinoma of the stomach, aged 55.

Henry Head Gray, M.D. Trinity Medical College, Toronto, 1890; of Oklahoma City; was found dead in his room in the Blossom House, Kansas City, March 10, from the effects of poison, self-administered, it is believed, with suicidal intent, aged 46.

Edward Clyde Day, M.D. University of the South, Sewanee, Tenn., 1900; of Platte, S. Dak.; aged 38; died in a sanitarium in Chamberlain, S. Dak., March 7, nine days after an accidental gunshot wound of the abdomen.

William Ferguson Matson, M.D. Western Reserve University, Cleveland, Ohio, 1877; for ten years local surgeon to the Allegheny Valley Railroad at Punxsutawney, Pa.; died at his home in East End, Pittsburgh, March 8, aged 58.

Abner Arnold McKinnon, M.D. Trinity Medical College, Toronto, 1899; died in his office in Port Huron, Mich., March 10, from the effects of carbolic acid, believed to have been accidentally self-administered, aged 42.

Thomas William McManus, M.D. College of Physicians and Surgeons, New York City, 1896; a member of the staff of Roosevelt Hospital, New York City; died at his home, March 12, from pneumonia, aged 45.

William Bedford Brown, M.D. Jefferson Medical College, 1889; professor of dermatology in the New York Post-Graduate Medical School; died in the Polyclinic Hospital, New York City, March 9, aged 50.

Thomas Dyer Henderson, M.D. University of Pennsylvania, Philadelphia, 1901; a member of the staff of the Presbyterian Hospital; died at his home in Philadelphia, March 11, from pneumonia, aged about 34.

James Albert Anderson, M.D. University of Virginia, Charlottesville, 1879; a member of the Medical Society of Virginia; of Lynchburg; died in a drugstore in that city, March 13, from acute gastritis.

Colin Walker, M.D. Detroit College of Medicine, 1895; a Fellow of the American Medical Association; Health Officer of Fork Township; died at his home in Barryton, Mich., January 9, aged 54.

Robert Ford Hipsley, M.D. West Pennsylvania Medical College, Pittsburgh, 1907; a Fellow of the American Medical Association; died at his home in Westview, Pa., about March 14, aged 39.

J. H. Deskins (license, W. Va., years of practice, 1881); for many years a practitioner of Greenbriar County; a Confederate veteran; died near Farmdale, W. Va., March 8, aged 89.

Henry S. Hinman, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1878; a practitioner of Jasper County, Ill., for thirty-six years; formerly president and secretary of the Jasper County Medical Society, and police magistrate of the city of Newton; died at his home March 19, from valvular heart disease, aged 66.

Conrad R. Bready, M.D. Jefferson Medical College, 1880; a member of the Medical Society of the State of Pennsylvania; for many years secretary of the J. Aitken Meigs Medical Association; died at his home in Philadelphia, March 10, aged 54.

James Spence, M.D. University of Toronto, Ont., 1884; died at his home in Thessalon, Ont., January 20, from the effects of carbolic acid, accidentally self-administered, aged 59.

Knud Christopherson Storlie, M.D. Bennett Medical College, 1896; a member of the Wisconsin State Medical Society; died at his home in Coon Valley, Dec. 29, 1913, aged 45.

Olin McCormick, M.D. College of Physicians and Surgeons, Chicago, 1900; of Herscher, Ill.; died in the Presbyterian Hospital, Chicago, March 20, aged 45.

Charles H. Dwyer, M.D. Jefferson Medical College, 1883; a veteran of the Civil War; died at his home in Frankford, Philadelphia, March 13, aged 68.

John William Winn, M.D. Medical College of Ohio, Cincinnati, 1870; of Oklahoma City, Okla.; died in a hospital in that place, March 1, aged 65.

Delarie Allen Bainter, M.D. Birmingham, Ala. Medical College, 1905; of Bessemer, Ala.; died in Lakeland, Fla., March 6, from tuberculosis, aged 44.

Scott Russell (license, years of practice, Iowa, 1886); a practitioner of Mechanicsville for thirty-five years; died at his home, March 4, aged 72.

Alva C. Norris, M.D. Physio-Medical Institute, Cincinnati, 1873; died at his home in New Richmond, Ohio, March 3, from heart disease, aged 65.

Van Buren Potts, M.D. University of Alabama, Mobile, 1905; of Mapleville, Ala.; died in an infirmary in Selma, March 7, from pneumonia, aged 37.

Jessie Fremont Shane, M.D. Cleveland College of Physicians and Surgeons, 1897; died at her home in Steubenville, Ohio, about March 14, aged 54.

George Louis Belisle, M.D. Laval University, Quebec, 1907; was found dead in bed in his home in West Rutland, Vt., January 16, aged 29.

William Smith (license, Indiana, 1897); one of the oldest practitioners of Delaware County; died at his home in Muncie, January 11, aged 70.

Archibald L. Morford, M.D. Medical College of Ohio, Cincinnati, 1891; died at his home in Ewing, Ky., March 4, from pneumonia, aged 44.

Albion Edwin Cobb, M.D. Dartmouth Medical School, Hanover, N. H., 1879; died at his home in Westbrook, Me., February 25, aged 57.

Hermanegilde Jeannotte, M.D. Vivtoria University, Cobourg, Ont., 1874; died at his home in Montreal, February 27, from nephritis, aged 65.

Emily H. Sawyer (license, Mass., years of practice); a practitioner of West Somerville, Mass., for thirty years; died at her home, March 4.

F. A. Whitefield, M.D. Pulte Medical College, Cincinnati, 1890; died at his home in New Providence, Tenn., February 28, from tuberculosis.

William H. Chew, M.D. Curtis Physio-Medical Institute, Marion, Ind., 1893; died at his home in Salamonia, January 6, aged 55.

Andrew B. Grider, M.D. Chicago Medical College, 1892; died at his home in Milwaukee about March 7, from pneumonia, aged 57.

O. W. Farrar, M.D. Missouri Medical College, St. Louis, 1891; died at his home in Stilwell, Okla., February 27, from dropsy, aged 44.

S. W. Moore, a pioneer practitioner of Texas; died at his home in Van Alstyne, Dec. 24, 1913, from senile debility, aged 83.

Hiram E. Turner, M.D. Long Island College Hospital, Brooklyn, 1874; died at his home in Brooklyn, March 8, aged 60.

Hubert Nichols, M.D. Bellevue Hospital Medical College, 1891; died at his home in Brooklyn, March 9, aged 49.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

AMORPHOUS PHOSPHORUS

Dr. Nascher's Reply to The Journal's Article—Comments

To the Editor:—Regarding the article on Amorphous Phosphorus in the March 7 issue of THE JOURNAL of the American Medical Association, I want first of all to clear myself of the implied charge of commercialism in connection with the marketing of the Pill Phosphorus Amorphous by Sharpe & Dohme. I have never had anything to do with the manufacture or sale of those pills, never had any business dealings with Sharpe & Dohme and I have no commercial interest whatsoever in either this or any other drug or drug house. I knew nothing about the advertisement which you reproduced until I saw it in the medical journals. I immediately protested against this unwarranted use of my name and was assured that the statement "Made under the direction of Doctor I. L. Nascher, New York," was not made for the purpose of misleading and that the ad. would be immediately withdrawn. I gave my approval to the pills made by this firm as I would give my approval to the pills made by any other reliable house for I claim the right to endorse any drug or preparation which I believe to be of value whether it is approved by the Council of [on] Pharmacy and Chemistry or not.

In your general charge of commercialism you make it appear that the exploitation of amorphous phosphorus had the ulterior purpose of appealing to the sexual neurasthenic along the lines of the "lost manhood" ads. So far as this relates to Sharpe & Dohme, I have no interest, but you have included me in your general denunciation. The only reference I ever made to aphrodisiac effects of Amorphous Phosphorus, in all my writings, is contained in these words in the four-page article in the *American Practitioner*, "In a few cases aphrodisiac effects were noticed." I have never recommended amorphous phosphorus as an aphrodisiac and in the chapters on "Impotence and Neurasthenia" in my book on "Diseases of Old Age," I have not mentioned amorphous phosphorus at all.

You say "the treatment seems first to have been brought to notice through a printed slip sent to medical journals generally." This slip containing an extract from my book which was then in press was sent out about four months ago while I have referred to amorphous phosphorus repeatedly in medical articles during the past three years. In my paper on Senile Debility, *Medical Record*, Jan. 21, 1911, I said amorphous phosphorus had no effect, as I was then looking for the usual effects of the ordinary phosphorus. In a paper on Senile Mentality, *International Clinics*, Vol. 4, 21st series, I said I was using amorphous phosphorus but had not yet determined its value. I recommended it in several of my papers, articles and lectures in 1912 and 1913 after I had found that under its use in some cases of senile arteriosclerosis, symptoms were relieved. I sent these slips to the medical journals as a general reply to many inquiries I received about amorphous phosphorus and I stated this in the letters I sent with the slips to some editors. Further inquiries for more information led me to write the paper which appeared in the December issue of that "obscure journal" the *American Practitioner*. I felt that a medical journal which carried articles by Sir James Barr, ex-president of the British Medical Association, Sir R. W. Philip, R. Murray Leslie, Halliday Sutherland, and such American authorities as Adami, Hare, Brooks, Hirschberg, Knopf, Starkey, Ely, Bissell, Wilcox, Col. Maus, U. S. A., etc., was a representative high class journal and I was pleased to have my paper appear in it.

To take up the scientific criticism of amorphous phosphorus, permit me to say at the outset that I am a general practitioner, specially interested in geriatrics, and more concerned about obtaining favorable clinical results in my cases than in solving laboratory problems. Nevertheless I have tried for years to obtain the cooperation of expert laboratory workers to help me determine the properties, chemical, physical and physiological, of amorphous phosphorus. In 1909 or 1910 the Rockefeller Institute, in reply to my request for permission

to experiment there with amorphous phosphorus, said it did not accept volunteer workers. Four heads of college laboratories could not spare the time. I asked the Council on Pharmacy and Chemistry last November to take up its investigation and was informed that it could not do so at present. I have been perforce compelled to depend mainly on empirical methods with such little experimentation as the facilities of the physician's office permitted and such little literature as I could find.

You reject empirical methods as being unscientific notwithstanding the fact that most of our therapeutic knowledge is based on empiricism. (I use the terms empirical and empiricism here in the sense of knowledge obtained from experience and observation, not in the bad sense in which they might be construed.) It would therefore be folly on my part to argue with you that I have obtained beneficial results from amorphous phosphorus in many cases of senile arteriosclerosis. I did not obtain such results from a single dose, but gave it in some cases for many weeks or months. It is unfair to judge of the value of a drug from a single dose or several doses unless it is a drug which is expected to show immediate effects. It would be greater folly on my part to pit my knowledge of ~ ~rmacy and chemistry against the knowledge of your staff of experts. I can but repeat what I have said on many occasions that under the persistent use of amorphous phosphorus in cases of senile arteriosclerosis symptoms were frequently relieved. I never claimed that amorphous phosphorus will cure arteriosclerosis. In the chapter on Arteriosclerosis in my book I say: "Senile arteriosclerosis being a natural, normal condition, is incurable in the sense that it can be neither prevented nor removed. The best that we can hope for is to retard its progress and relieve disagreeable symptoms, etc."

You say in reference to the elimination of the amorphous phosphorus as amorphous phosphate of calcium, "Is it not a fact that he (I) found the urine alkaline and detected a precipitate of amorphous calcium phosphate—always present in alkaline urine—and concluded that this must be his particular amorphous phosphorus in combination with calcium?" No. The specimens of urine were examined in reliable laboratories and I have reports showing acid and neutral urine as well as alkaline urine having the amorphous phosphate precipitate. Nor is the amorphous phosphate "always present in alkaline urine."

As for the theory I advanced, it is simply a theory based on reasoning without facts to prove it. If I had facts to prove it, it would no longer be a theory or open for discussion. Being a theory, it is the province of the wise man to ridicule it and call it absurd. I will confess that your criticism of it is not clear to me and I still do not see its absurdity. I don't see what relation your argument, that the phosphates of sodium and potassium do not draw the calcium from the blood, brains and bones, has to the theory I advanced. It is true that I have no private mark by which I can identify the amorphous phosphate produced by amorphous phosphorus, but such argument is puerile. When medical science has so far progressed that the physician will be able to put his tag on the molecule of drug substance and follow it through the various metabolic processes to its final elimination we will not need any Council on Pharmacy and Chemistry to decry what it cannot understand. Let me say here that scientific criticism does not stoop to ridicule for ridicule is usually based on animus or bias.

The conclusive proof of the value of a drug is not its action on the healthy dog, frog or guinea-pig but its action on the individual patient, and no amount of animal experimentation can dispose of the personal factor which is so marked in senile cases. This is no criticism of animal experimentation as a whole but of the insistence on animal experimentation to determine the value of a drug in a class of cases for which the healthy animal can furnish no comparison.

You say amorphous phosphorus is practically inert and quote Noé, Witthaus and Becker, Thornton and Phillips. The quotations of the first three are little more than statements that amorphous phosphorus is non-toxic. Phillips makes two references, one of which is to Badner who obtained decided effects from its prolonged use. Thornton, whom you quote in your contention that amorphous phosphorus is inert, says that on prolonged use in doses of 3/10 grains every two hours it produced headache, vertigo, mental excitement, priapism, etc. (See footnote under Phosphorus, U. S. Dispensatory). Shoemaker's Materia Medica and Therapeutics says it is toxic and is called the servant-girl's poison. Phillips suggested that Baduer probably used an impure drug. I suggested that Thornton probably used an impure drug. On the other hand, Badner and Thornton obtained positive results from prolonged use, not from the single dose.

You say it has not been used on account of its insolubility in any of the liquids of the body. Roscoe and Schorlemmer, quoting Neuman, said if injected into the blood the usual symptoms of phosphorus poisoning appear. In a letter from Dr. Hatcher he says Nassé injected 0.2 gm. of the purest amorphous phosphorus into a rabbit's vein and the animal presented the usual symptoms of phosphorus poisoning. There are also references to amorphous phosphorus action in Kobert's *Lehrbuch der Intoxicationen*, in Blythe's Poisons, etc.

You say of your four quotations, "the foregoing represents our scientific knowledge as to the action of amorphous phosphorus." Did you not know of these other authorities, or are their statements unscientific, or were they omitted because they disprove your contention that amorphous phosphorus is practically inert.

Your denunciation of ordinary phosphorus has no bearing on the subject as I do not recommend the amorphous phosphorus as a substitute for the other.

I have worked for eight years to arouse medical and public interest in the aged and their ailments and I cannot afford charges of commercialism, foisting worthless drugs as aphrodisiacs or other unethical conduct to stand against me. As for the charge of unscientific work, I can only point to my work on Diseases of Old Age, and my medical papers, and express the hope that others better equipped for laboratory research will take up the laboratory investigation of amorphous phosphorus. I have faith in its therapeutic value and believe competent clinical observers will have favorable results from it in suitable cases.

I. L. NASCHER, M.D., New York.

COMMENT: Accompanying the preceding letter was a note from Dr. Nascher in which he says: "I want this published in full without elision or change. If you do not intend to publish it as written, I want it returned and enclose postage." The letter therefore is given in full in spite of the fact that much of it is irrelevant to the question discussed.

Dr. Nascher's protest to Sharpe and Dohme against the "unwarranted use" of his name in connection with "Pill Phosphorus Amorphous, S & D" seems to have resulted in various modifications of the phrases connecting his name with the exploitation of this pill. What was apparently the original advertisement, contained the phrase:

"Made under the direction of Dr. I. L. Nascher, New York."

Later advertisements, while identical in all other respects with the first, had this phrase modified to read:

"Made at the suggestion of Dr. I. L. Nascher, New York."

Still other advertisements, also identical with the first in other respects, are modified to read:

"Made with the approval of Dr. I. L. Nascher, New York."

That Dr. Nascher was directly or indirectly connected with the commercializing of this product, THE JOURNAL has never suggested, inferentially or otherwise. That the exploitation of amorphous phosphorus by Sharpe and Dohme is one that appeals to the sexual neurasthenic, no one who has read the advertisements can deny. As a matter of fact, it would be difficult to sell phosphorus in any form as a medicament, without appealing to the sexual neurasthenic. The word "phosphorus" has become, in the minds of both laymen and physicians, more or less synonymous with the treatment of so-called sexual weakness and it is a practical impossibility to divorce the word from the idea suggested. How true this is, Dr. Nascher himself unwittingly admits when he tells that the result of his first experiment on himself with amorphous phosphorus was a priapism that he acknowledges was "probably psychic, as I was looking for such a result." But the Sharpe and Dohme advertisements plainly state that the amorphous phosphorus pill they are marketing is a "new and successful method of treatment for . . . functional and senile impotence . . ."

Dr. Nascher's explanation of how he came to send out the slip regarding amorphous phosphorus to medical journals leaves him the victim of an unfortunate coincidence. It is at least unusual for authors to send out advance extracts from

books that are about to be published, especially when such extracts deal wholly with a drug that is coincidently being introduced as a new proprietary product by some enterprising pharmaceutical house.

Dr. Nascher takes exception to our statement that the treatment seems first to have been brought to notice through the printed slip sent to medical journals, and states that he has "referred to amorphous phosphorus repeatedly in medical articles appearing during the last three years." His articles for 1912 and 1913 have been examined for the purpose of learning when the treatment as now presented to the profession was first announced. In his article "Errors in the Treatment of Senile Cases," *New York Medical Journal*, Oct. 12, 1912, he speaks of the iodids in senile arteriosclerosis, but says nothing about amorphous phosphorus. It may be assumed, therefore, that the treatment had not been brought to general notice at that time. The new treatment is very briefly described in the *New York Medical Journal*, July 13, 1913, in an article whose title, "Longevity and Rejuvenescence" gave no indication that it dealt with amorphous phosphorus. Under the circumstances, it is not strange that its therapeutic value was not learned of until Dr. Nascher's printed slips were sent out.

Dr. Nascher admits that his theory is based on empirical methods. Most of the serious errors in therapeutics have had their origin in this very method. It was on just such methods that physicians reported wonderful results in the use of alleged "lithia waters" that actually contained less lithium than ordinary river water! So unscientific is the empirical method that it is hardly worth taking the space to demonstrate its imperfections.

Neither is it worth while to discuss the question of a constant occurrence of a sediment of amorphous calcium phosphate in alkaline urine. If there are exceptions to this rule, they must be rare indeed.

In THE JOURNAL'S article authors were quoted to show that amorphous phosphorus is regarded as inert. It was not suggested that the authorities referred to were all that could be found. Dr. Nascher refers to Thornton, Shoemaker, Neumann, Blythe and Kobert, and asks whether the various statements on the subject, made by these men, are unscientific or were "omitted because they disproved" the contention that amorphous phosphorus is practically inert. Thornton's article was omitted because it is unscientific in that he does not report experiments made by himself, but refers to an unpublished paper by one Kelly. Who Kelly is, or was, he does not tell us. Kelly's report, therefore, should be and was disregarded, since it is the work of an unknown author and there is nothing in the article to indicate that Thornton was in any position to vouch for Kelly's work. Incidentally, it may be said that Kelly's report merely recorded subjective symptoms; Dr. Nascher himself indicates his distrust of Kelly's alleged results by suggesting that an impure preparation was used!

Shoemaker's report was not given, for a similar reason. Shoemaker says:

> "Amorphous phosphorous is almost completely destitute of taste or odor, has no immediate caustic effect, and is claimed to be less toxic than white phosphorous; but in the *form of matches* [Italics ours.—ED.] has caused many deaths and is known as the "servant girls' poison'."

It is well known that commercial amorphous phosphorus is usually impure, and it is more than probable that if toxic effects were produced by the ingestion of match-heads, these matches were made either of white phosphorus or of very impure red phosphorus. In any case, Shoemaker's statement has no bearing whatever on the pharmacologic action of pure amorphous phosphorus.

The statement of Neumann quoted from Roscoe and Schorlemmer, as well as that of Nassé, referred to by Hatcher, had no bearing on the question at issue, as these men injected the material into the blood-stream. If, when the amorphous phosphorus is injected into the blood, it produces the ordinary symptoms of phosphorus poisoning, one would naturally expect the same symptoms when the substance is given by mouth—if amorphous phosphorus were soluble or absorbable. The fact that such symptoms are not produced when amorphous phosphorus is taken into the alimentary canal, sustains the views held by chemists, pharmacologists and physicians, that the drug is practically insoluble and unabsorbable—in other words, inert.

Dr. Nascher declares that he "never claimed that amorphous phosphorus will cure arteriosclerosis." Yet he insists that amorphous phosphorus removes lime from the "abnormal lime deposits" that occur in arteriosclerosis. What is this but claiming curative action?

Summed up, Dr. Nascher's own admissions amply confirm the main contentions of THE JOURNAL'S article. He admits that he has no experimental basis for the use of this remedy; he admits that his theory "is simply a theory without facts to prove it." The only conclusions that can be reached from his reply coincide closely with the very statement made by THE JOURNAL, and which we here reiterate:

"It seems evident, therefore, that his claims for the value of this remedy rest on no better foundation than an unproved theory without experimental basis."

SANATOGEN TESTIMONIALS—A CAUSE FOR OPTIMISM

"The Opinions of Members of the American Medical Association regarding Sanatogen" is the title of a sixteen-page booklet now being inflicted on the medical profession. As in all such cases, THE JOURNAL was immediately made aware of this advertising campaign by physicians sending in, by the score, the latest "literature." Many who have forwarded the Sanatogen booklet deplored the fact that members of the American Medical Association should have given the testimonials printed, and feel that there is reason for pessimism in the spectacle presented. Far from it! This booklet is one of the most encouraging things that have come to THE JOURNAL office in a long time. Ten years ago the enormously expensive Sanatogen advertising campaign would have resulted in hundreds of physicians giving testimonials for the product, and scores writing puffs for the stuff in the form of "original articles," in venal medical journals. To-day, thanks to THE JOURNAL'S campaign on the proprietary evil, the exploiters of Sanatogen are able to submit forty-three testimonials from members of the American Medical Association. And of those not one of the forty-three is apparently willing to have his name appear in connection with his endorsement! Forty-three men out of a total membership of about 70,000! Forty-three members of the American Medical Association out of an alleged "19,000 original letters from members of the medical profession in America, England, Germany and other countries." Assuredly, here are grounds for optimism. It may be noted, incidentally, that out of the 43 testimonials alleged to have been given by members of the American Medical Association, 15 are from New York, 6 from Pennsylvania, 5 each from Massachusetts and Illinois, 3 from Maryland, and one each from Alabama, Maine, Michigan, Missouri, New Jersey, Ohio, Rhode Island, Utah and Wisconsin.

Brahman Medicine.—The center of medical science lay in the holy city of Benares on the Ganges—also the seat of Brahmanic learning. The following view was current on the necessary traits of a scholar suited for the study of medicine and those of a fit teacher: "The scholar must have a quick tongue, small lips, regular teeth, a noble aspect, well-formed nose and ears, a lively spirit and a graceful bearing; he must be capable of withstanding pain and fatigue." "The teacher must read aloud from the holy book, step by step, verse by verse, distinctly, but without effort, without hesitation, neither too quickly nor too slowly, not speaking through the nose, showing no trace of impatience," etc. At the close of the initiation ceremony the novice was warned to be chaste and abstemious, to wear a beard, to speak the truth, to eat no meat, to render to his teacher obedience in all things; as a physician he was to treat gratuitously Brahmans, teachers, the poor, friends and neighbors, the pious, orphans, etc.—Neuburger: History of Medicine.

Correspondence

Psychanalysis

To the Editor:—The conclusions reached by Dr. Dercum in his article, "An Evaluation of the Psychogenic Factors in the Etiology of Mental Disease, Including a Review of Psychanalysis" (THE JOURNAL, March 7, 1914, p. 751), are so widely at variance with my personal experience and so vehemently opposed to the views of men whose opinions are authoritative in psychiatric matters, that I think the article should not pass unchallenged.

In his opening paragraph Dr. Dercum seems to see confusion resulting from disregard of what he terms "established clinical distinctions" in psychiatry. As a matter of fact, the older clinical distinctions have been inadequate; they disregarded the finer mechanisms lying back of symptoms. The more recent developments in psychologic knowledge enable us, chiefly by means of psychanalysis, to get at these pathologic mechanisms, an understanding of which is essential in order to make necessary differential distinctions. It is on such distinctions that the entire situation often depends—diagnosis, therapy and prognosis. The folly of attempting to deal with psychiatric cases without a searching probing for the hidden mechanisms which may lie at the bottom of the trouble is well illustrated by a few brief points in the history of a recent patient: The man, who came to me within the past year, had been dominated for fifteen years by fears of leaping from moving trains or high windows. His business was seriously interfered with; he would drive or walk hundreds of miles to avoid taking a train. He had been labeled a neurasthenic, a psychasthenic, a victim of imagination or a fool in accordance with the lack of insight of the man he happened to be consulting. The patient was at the point of desperation; he could no longer make a living. A few talks with him brought to light the fact that the obsessions dated from a time when, weak from a severe siege of typhoid, he had been wrongly told by his physician, because of a sore throat, that he had syphilis, in spite of the patient's earnest denials of the possibility of such infection. Since he was a man of unusual delicacy and breeding, the thought of having such a disease was intolerable. It unfortunately happened that immediately following the announcement of syphilis—the patient weakened from typhoid and in terror over his supposed infection—his attention was called to two suicides, the one by leaping from a window, the other by leaping from a train. His mind, unable to endure the loathsome thought of syphilis, transferred its anxiety to a more respectable obsession: the fear of death by one of these means. This has absolutely dominated his life ever since. The dread of syphilis was immediately and entirely forgotten; it was with some difficulty that he could recall the matter at all. When shown just what lay back of his phobia, the man, able to recognize the significance of the etiologic factors, began at once to improve. He is now in a fair way to recovery. The existence of syphilis was positively excluded. Fifteen years of regard for "established clinical distinctions" had been of no avail in this case! A letter is too brief in which to cite the many cases I have personally known in which the patient has been helped by being led to a comprehension of the reasons for his malady, or the circumstances which have gone to building it up. A knowledge of these circumstances and of the causes lying deep in the patient's unconscious are to be reached, in suitable cases, only by means of psychanalysis.

Dr. Dercum seems to throw all functional nervous and mental disorders back on an underlying neuropathy, and to be satisfied without differentiating further in diagnosis. "Neuropathy" is a purely relative, an extremely vague and elastic term; etymologically, it means any nervous disease. Dr. Dercum seems to read etiology into neuropathy with as much facility as he erroneously accuses the psychanalysts of finding what they are looking for in "hysteria"—the term hysteria is his explanation of their findings. Granting this underlying neuropathy (which I cannot do in every case), what is to be done with these patients? In refusing to accept psychanalysis we turn our backs on a valuable aid for their treatment. A diagnosis of underlying neuropathy does not indicate treatment beyond general physical measures. It fails to recognize the special personal therapy indicated in every functional neurosis, which should take into account all the factors in the individual's environment with a view to eradicating harmful mental reactions.

Dr. Dercum seems to deny that a normal person can show pathologic results from emotional causes. On this assumption are we to infer that every normal person has an infinite capacity for withstanding all varieties of emotional stress, regardless of intensity or length of duration? Recently there came into my service a young woman, aged 17, suffering from a psychosis which seemed to result from the fact that two years previously she had been compelled to cohabit with her drunken father. I do not believe an underlying neuropathy is necessary for the development of a psychosis under such circumstances. Every one is familiar with psychoses arising from continued emotional stress, such as long terms of unjust imprisonment or the years of terror lived through often by wives of drunken husbands. Normally, there is a tremendous physiologic reaction to intense emotion like fear, anger, etc., revealed, for instance, in the rapid heart, secretory and circulatory changes, and mental reactions. It requires no great stretch of the imagination to see how such emotional states, if prolonged, may bring about pathologic results.

The best refutation of Dr. Dercum's discussion of the Freudian theory is a careful reading of the Freudian writers themselves. Dr. Dercum certainly misunderstands the meaning of sexual manifestations in the Freudian sense. In this sense it covers a broad and comprehensive field of experience and activity, whether bodily desires or mental longings. It embraces all desires, instincts, wishes, ambitions—like hunger, sex, acquisition, aspiration, the social sense, love of art, etc. This is a far cry from the narrow vulgar conception of the term which seems to be understood by the men opposing the Freudian psychology.

Finally, does it not seem a bit presumptuous to condemn psychanalysis wholesale, when it is being seriously followed by psychiatrists everywhere? If we shut out from acknowledgment Freud himself, there are still to be reckoned with such earnest students of the "cult" as Bleuler, Jung, White, Burrow and Meyer, along with other noted names. In the face of the enthusiastic acceptance of psychanalysis by such sternly scientific men as Bleuler and Jung, Dr. Dercum still sees it as only a "faith"; as resting on no "scientific proof" whatever.

Dr. Dercum states that neither Freud nor his followers have given Janet's contributions to the suject of hysteria "recognition or attention." Jung, in his monumental monograph, "The Psychology of Dementia Praecox" (Monograph 3, Journal of Nervous and Mental Disease Publishing Company, New York, 1909), gives serious recognition, particularly in the chapter on dementia praecox and hysteria, to Janet's important contributions to the subject of hysteria.

C. C. WHOLEY, M.D., Pittsburgh, Pa.

The Histopathologic Loan Collection and Relieving the Curriculum

To the Editor:—In THE JOURNAL, Jan. 24, 1913, p. 314, there appeared a letter from Dr. R. A. Lambert commenting on our article bearing this title which appeared in THE JOURNAL, January 10.

In teaching chronic nephritis we find it desirable to present to the students as nearly pure types as possible. For example, pure types of chronic intracapillary glomerulonephritis and chronic capsular glomerulonephritis. With about two hundred necropsies a year we find that we do not often meet such pure types. When we do meet one we recognize the occasion as an opportunity to add it to the loan collection in case the collection is not already provided with suitable material of this character. The histology of chronic nephritis,

as encountered in man, will undoubtedly be the same as it is now for many years in the future.

After the course is completed we feel that it is desirable that the student should be engaged largely in the active, more detailed study of specific problems rather than on such a large territory as a set of sections that have been given to him during the course in pathology involves. In any case loan collections are at his disposal during the third and fourth years if he cares to use them.

We are not convinced that the students are in a position to judge of the matter. The chief problem of the teacher is to give to the student as much practical experience as possible during the period of his course, that is, to apply as extensively as possible the "learn by doing" (President MacLaurin) method of teaching during the student's formative years, and to provide time for it.

In our opinion the first fifteen or twenty minutes of a laboratory meeting constitute the most valuable period of the meeting, and if this fifteen or twenty minutes is spent in the rather taxing routine of mounting sections the success of the work of the laboratory period is seriously affected. Furthermore, seventeen and one-half minutes taken from each laboratory period of the course constitutes a total of nineteen hours. This goes far toward providing scheduled time for a course in experimental pathology. The scheduled time given to the longest established course in experimental pathology in this country is thirty hours.

H. S. STEENSLAND, M.D.,
H. G. WEISKOTTEN, M.D.,
Syracuse, N. Y.

New Method for Therapeutic Use of Typhoid Vaccine

To the Editor:—Recently in THE JOURNAL (March 7, 1914, p. 800) there appeared an abstract of a preliminary report on this subject by Dr. I. S. Kahn of San Antonio, Tex. Dr. Kahn brings forward the theory that typhoid patients or those who have recovered from typhoid react to small doses of typhoid vaccine in a manner similar to that in which patients suffering from tuberculosis react to tuberculin. This theory is wrong. Typhoid patients do not give a reaction to minute amounts of typhoid vaccine, as their serum contains an antibody brought into play by their attack of fever. The body reacts against the introduction of a foreign protein (typhoid bacilli).

In 1911, I published a skin-reaction test based on this theory of antibody in the system of those suffering from typhoid fever (*Med. Rec.*, New York, Dec. 31, 1911). The typhoid patient gives no reaction to the test because of his antibody. The person free from typhoid gives a slight skin reaction, because of his lack of antibody to fix the vaccine.

F. A. PRENDERGAST, M.D., Brooklyn.

Lactic-Acid Bacillus Spray and Sour Milk in Diphtheria

To the Editor:—The suggestion of Dr. Harold B. Wood, in his article, the "Lactic-Acid Bacillus Spray for Diphtheria" (THE JOURNAL, Aug. 9, 1913, p. 392), to swab the throat with sour milk when other means were not at hand, induced me to make a trial of this method. I employed it in two cases, and on Jan. 3, 1914, we began the use of lactic-acid bacillus spray. The results so far have been exceedingly gratifying, but it will be at least six months before we shall be ready to publish our findings. I desire, however, to say most emphatically that in no case of diphtheria should this method supersede the use of antitoxin. I am offering this preliminary note because our work here at Ann Arbor slightly antedates that of Drs. S. T. Nicholson, Jr., and John F. Hogan, whose paper appears in THE JOURNAL, Feb. 14, 1914. Since August, 1913, over one hundred cases of diphtheria and of diphtheria carriers have come to my notice. Our results from the point of view of prophylaxis and of shortening the period of quarantine have been uniformly good.

JOHN A. WESSINGER, M.D., Ann Arbor, Mich.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MILK POWDER AND CONDENSED MILK AS INFANT FOOD IN TROPICS

To the Editor:—In our tropical country, where the milk is not sufficient to supply the demand, condensed milk is extensively employed as a food for infants and children. I have read several articles and lately a book called "Le lait desséché," by M. C. Prof. Ch. Porcher de Lyon, in which powdered or dry milk is asserted to be superior to the condensed milk.

Do you think that it is better suited than condensed milk for infants' or children's food?

Do you think that the dry milk is more suitable and less apt to decompose in warm climates?

Would you advise the powdered milk for general use as a children's food?

Please indicate the name and address of some firms which manufacture the article properly.

LUIS P. JIMENEZ, M.D., San José, Costa Rica.

ANSWER.—We are unable to find anything touching on Porcher's "Le lait desséché." The libraries here have no such book, and we are inclined to think that the preparation is a proprietary food the same as others which will be mentioned later.

As to whether or not condensed milk is food best suited for infants in tropical climates there is some doubt. Condensed milk is usually divided into two groups: first, the evaporated milk, to which no sugar is added and, second, condensed milk which is condensed with cane-sugar to the amount usually of 40 per cent. McCampbell, in the laboratories of the Ohio State University and the University of Chicago, in testing the sediment of condensed milk, has found a large amount of manure, and has been able to demonstrate tubercle bacilli both by culture and by animal experimentation. This would raise some grave doubt as to whether condensed milk, as it is usually prepared, is a good food for infants. To make condensed milk a marketable product, and sell it at the price at which it is often sold, it is necessary that rather poor milk be used. This is indicated by the relatively low percentage of fat in the various contents of the milks. The objections to these condensed milks are two: First, evaporated milk is subject to decomposition, and probably this milk is not shipped to tropical climates. Second, milk to which cane-sugar is added very frequently produces nutritional disturbances in infants, cane-sugar being that form of sugar which is hardest for the infant to dispose of.

Probably a milk powder is more suitable in hot climates and less apt to decompose. Where it is not possible to obtain fresh milk or good milk, powdered milk would probably make a good food for general use in the feeding of infants and children. The powdered forms of infant foods may be divided into several different classes. For the purpose in question, the class to which milk must be added is not to be considered. We have besides this class many forms of powdered infant-foods, most of which are dried milk to which has been added carbohydrates in the form of starch or dextrin or maltose mixtures. Among these may be mentioned:

Eskay's Food, which has an approximate composition of 6 per cent. protein, 1 per cent. fat, 68 per cent. sugar, 21 per cent. starch, and 3.9 per cent. salts. Sugar, as in this instance, is largely maltose. Eskay's Food is to be obtained from Smith, Klein and French Company, Philadelphia.

Horlick's Malted Milk, which contains 16.5 per cent. proteins, 9 per cent. fat, 68 per cent. sugar consisting of maltose, and 3.9 per cent. salts. There is no starch in this food. This may be obtained from the Horlick's Malted Milk Company, Racine, Wis.

Nestlé's Food, which contains 4.6 per cent. fat, 10.8 per cent. protein, 23.6 cane-sugar, 6.7 per cent. milk-sugar, 17.5 malt-sugar, 10.6 per cent. other soluble carbohydrates, and 21.6 per cent. starch. This can be obtained from the Nestlé's Food Company, 92 Chambers Street, New York City.

Other infant foods, such as modified milk powder, which contains 13.2 per cent. fat, 17.7 per cent. proteins, and 58.4 per cent. milk-sugar; and Mammala, which contains 12.1 per cent. fat, 24.3 per cent. proteins and 55.4 per cent. milk-sugar.

Allenbury's Food, which comes in two forms: No. 1 contains 17.3 per cent. fat, 10.8 per cent. proteins, 41.7 per cent. milk-sugar, 13.7 per cent maltose and 10.2 per cent. other carbohydrates. No. 2 contains 16 per cent. fat, 10 per cent. proteins, 36 per cent. milk-sugar, 19 per cent. malt-sugar, and 12.5 per cent. other simple carbohydrates. Allenbury's Malted Food, or No. 3, contains 0.8 per cent. fat, 10.4 per cent. proteins, 13.5 per cent. maltose, 6.7 per cent. other carbohydrates, and 57.7 per cent. starch.

Other powders introduced on the market, such as the albumin milk powder, which is put out by Louis Hoos, 5232 Kenmore Avenue, Chicago.

Perhaps powdered milk preparations in more or less liquid form would be more stable in a warm climate than would the ordinary evaporated foods, since the lactic acid bacillus has already brought about as much of an acid formation as possible and therefore excludes the further action of fermentative bacteria to a large degree. Since putrefaction occurs only in sterilized milk, if these foods are evaporated *in vacuo*, as most of them are, there ought to be comparatively little danger of further decomposition than that which is brought about by the action of the lactic acid bacillus on the milk-sugar. Such a preparation as Biedert's Buttermilk Conserve, or Albuco, a form of albumin milk, which is put up by the National Dairy Products Company, 152 North Paulina Street, Chicago, is an example of the product above described.

Unfortunately for our purpose, no foods are prepared in this manner which have the full approbation of the medical profession; but in a case such as this, it is necessary to do the best we can with the materials obtainable; and while it is altogether likely that the foods here mentioned are in no way proper substitutes for good cow's milk mixtures, still they can be used with the proper precautions as to amount, etc. It should be mentioned, however, that in few cases is it possible to take for granted what the advertiser says of his product, and the quantities which are recommended are very frequently much in excess of the amount required for the individual baby.

ASTHMA AND HAY-FEVER AS CONTRA-INDICATIONS OF DIPHTHERIA ANTITOXIN

To the Editor:—In THE JOURNAL, Jan. 31, 1913, p. 378, the following statement is made: "When antitoxin is indicated in diphtheria, or horse-serum in hemorrhage, one should be sure to inquire whether or not the patient is an asthmatic or a sufferer from hay-fever, and especially if horse emanations cause either of these conditions. If such is the case, all horse-serums are positively contra-indicated. Even severe diphtheria must be combated without the aid of antitoxin, as its use may cause the death of such patients."

I should like to ask how generally these rules are concurred in and if there may not be exceptions to them.

GEORGE D. CARNES, M.D., South Haven, Mich.

ANSWER.—As a rule, diphtheria occurs in children too young to have become sensitized against horse-serum or to have experienced an attack of asthma. In such cases there should be no hesitation in giving the antitoxin. In adults or older children who have exhibited such symptoms of asthma or are sensitized to proteins from the horse, the caution given should be scrupulously regarded.

LITERATURE ON ALCOHOLISM

To the Editor:—Please give references to the literature on alcoholism.

C. E. SCELETH, M.D., Chicago.

ANSWER.—The following is a fairly representative bibliography of this subject:

Phelps, E. B.: Supposed Death-Rate of Abstainers and Non-Abstainers and Their Lack of Scientific Value, *Am. Underwriter and Insurance Rev.*, July, 1913.

Is Alcohol a Food? editorial, THE JOURNAL, Sept. 20, 1913, p. 966.

The Occurrence of Alcohol in the Tissues, Current Comment, THE JOURNAL, Oct. 11, 1913, p. 1383.

Woods, Matthew: Seven Cases of Epilepsy in Children Traced to Single Alcoholic Intoxications on the Part of One or Both Parents Otherwise Teetotalers, THE JOURNAL, Dec. 27, 1913, p. 2291.

Wood, H. C.: Habitual Use of Alcohol, *Lippincott's Month. Mag.*, 1913, xci, 175.

World-Wide Fight against Alcohol, *Rev. of Rev.*, 1912, xlv, 374.

Mervin, S.: Fighting the Deadly Habits; the Story of Charles B. Towns, *Am. Mag.*, 1912, lxxiv, 708.

Ferris, A. W.: Alcohol and Insanity, *Survey*, 1910, xxiii, 775.

Emerson, C. P.: Insanity and Disease, *Survey*, 1910, xxv, 41.

Salmon, T. W.: Two Preventable Causes of Insanity, *Pop. Sc. Month.*, 1910, lxxvi, 557.

Liquor Problem and Public Health, *North Carolina State Board of Health Bull.*, December, 1912.

The Taboo on Moderate Drinking, Current Comment, THE JOURNAL, Nov. 2, 1912, p. 1631.

The Pathologic Anatomy of Chronic Alcoholism, editorial, THE JOURNAL, Nov. 27, 1909, p. 1824.

Alcoholism and the Germinative Cells, editorial, THE JOURNAL, Feb. 19, 1910, p. 617.

Alcoholism and Heredity, editorial, THE JOURNAL, Feb. 4, 1911, p. 350.

Alcohol and Insanity, Current Comment, THE JOURNAL, April 20, 1912, p. 1203.

Alcohol and Racial Degeneration, editorial, THE JOURNAL, Dec. 21, 1912, p. 2261.

Billings, J. S.: Physiological Aspects of the Liquor Problem, Boston, Houghton, Mifflin & Co., 1903, two volumes.

Crosby, J. A.: Prescribing Alcohol, *Jour. Minnesota Med. Assn.*, 1907, xxvii, 163.

Hobhouse, F.: Alcohol on the Medical Side, *Med. Mag.*, London, 1907, xvi, 190.

Hunt, Reid: Studies in Experimental Alcoholism, Bull. 33, Hyg. Lab., 1907, Washington, D. C.

Grimm, A. S.: Medical Profession Losing Faith in Alcohol, *West Virginia Med. Jour.*, September, 1908.

Kellogg, J. H.: Latest Verdict of Science on the Alcohol Question, *Lancet-Clinic*, Oct. 3, 1908.

McDonald, J.: Remedial Uses of Alcohol, *Brit. Med. Jour.*, Jan. 30, 1909.

Osborne, O. T.: Therapeutic Use of Alcohol, *Yale Med. Jour.*, 1909-1910, xvi, 258.

Wiggs, L. B.: Some Pharmacological Observations on the Action of Various Potent Remedies, 1. Alcohol, *Old Dominion Jour. Med. and Surg.*, 1909, ix, 252.

Starke, J.: Alcohol, the Sanction of Its Use, Scientifically Established and Popularly Expounded by a Physiologist, New York, G. P. Putnam's Sons.

Sajous, C. E. de M.: Alcohol in Therapeutics, *Month. Cycl. and Med. Bull.*, July, 1910; *Jour. Inebr.*, 1910, xxxii, 149.

Bliem, M. J.: The Growing Disuse of Alcohol in Therapeutics, *Texas State Jour. Med.*, 1911-1912, vii, 6.

The Metropolitan, A number devoted to the effects of alcohol, 1911, xxv, No. 11, The Metropolitan Life Insurance Company, New York.

The Medical Use of Alcoholic Liquors, Testimony of Physicians, Mrs. M. M. Allen, Marcellus, N. Y.

International Congress on Alcoholism, Twelfth Report of Official Delegates Appointed by U. S. Government, 1909, International Reform League, 206 Pennsylvania Avenue, Washington, D. C.

Smith, F. E.: True Lines of Temperance Reform, *Nineteenth Cent.*, 1912, lxxi, 730.

ARTICLES ON MENTAL PATHOLOGY OF PELLAGRA

To the Editor:—Please furnish me with a bibliography on the subject of the mental pathology of pellagra. It occurs to me that this phase of the disease has been neglected to a considerable extent.

J. C. HERRINGTON, M.D., Asylum, Miss.

ANSWER.—The following is a list of recent articles on this subject:

Hoag, D. E.: Pellagra: Observations on Some of Its Nervous Manifestations, THE JOURNAL, Oct. 19, 1912, p. 1445.

Preston, J. W.: Mental Stress a Possible Etiologic Factor in Certain Cases of Pellagra, *Med. Rec.*, New York, Dec. 2, 1912.

Taylor, I. M.: Personal Experience with Some Cases of Nervous and Mental Diseases Showing the Pellagra Syndrome, *Jour. South Carolina Med. Assn.*, November, 1908; abstr., THE JOURNAL, Jan. 9, 1909, p. 168.

Singer, H. D., and Pollock, L. J.: The Histopathology of the Nervous System in Pellagra, *Arch. Int. Med.*, June, 1913, p. 565.

Mott, F. W.: Histologic Changes in Nervous System of Dr. Box's Case of Pellagra, *Brit. Med. Jour.*, July 5, 1913.

Green, E. M.: Psychosis Accompanying Pellagra, *Georgia Med. Assn. Jour.*, April, 1913.

Gardner, W. E.: Pellagra as Related to Insanity, *Kentucky Med. Jour.*, May 1, 1913.

Tucker, B. R.: Pellagra in Relation to Neurology and Psychiatry, *Am. Jour. Med. Sc.*, March, 1912.

ANTIQUITY OF THE SUTURING OF TENDONS

To the Editor:—Can you tell me who first sutured tendons?

J. H. JAMES, M.D., Mankato, Minn.

ANSWER.—We do not know who first sutured tendons. It was probably done before the dawn of medical history, for we find Galen already giving his reasons why and when it should not be done, and discussing the whole subject. From then down almost every great surgeon has mentioned the subject of suturing tendons. It is one of those things that seem always to have been done. Of course, the method or technic has constantly changed and undergone improvements, as in other operations; but the originator of the idea or the first one to do it is certainly lost in antiquity.

STATES WITH WHICH PENNSYLVANIA RECIPROCATES

To the Editor:—Please tell me with what states Pennsylvania reciprocates.

S. W. R.

ANSWER.—Pennsylvania has reciprocal relations with the following states: Arkansas, Colorado, Delaware, District of Columbia, Georgia, Indiana, Louisiana, Maryland, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New Mexico, Ohio, Vermont, Virginia, West Virginia, Wisconsin and Wyoming.

CAMMIDGE REACTION

To the Editor:—Please explain the Cammidge reaction.

G. MES, M.D., Cullman, Ala.

ANSWER.—The Cammidge reaction depends on the presence in the urine of an unknown substance, probably a carbohydrate. It was believed at one time to be due to glycerin and later to a pentose, but these suppositions have not been confirmed. Recent investigations have shown that this reac-

tion is not pathognomonic. It may occur in other conditions than pancreatitis and is not always present in cases of pancreatic disease.

The urine to be tested should be a portion of a twenty-four-hour specimen and must be freed from glucose and albumin. The following is the technic:

Forty c.c. of clear, filtered acid urine are acidified with 2 c.c. of concentrated hydrochloric acid and boiled for ten minutes. The mixture is then cooled and made up to 40 c.c. with distilled water. The excess of acid is then neutralized by the addition of 8 gm. of lead carbonate and the mixture cooled if necessary. The resulting precipitate is filtered off and the filtrate treated with 8 gm. of powdered tribasic lead acetate to remove the glycuronic acid. The mixture is again filtered and the filtrate is treated with 4 gm. of powdered sodium sulphate, heated to the boiling-point, and allowed to cool. The lead sulphate is removed by filtration. Ten c.c. of the clear filtrate are made up to 17 c.c. with distilled water, 0.8 gm. of phenylhydrazin, 2 gm. of sodium acetate, and 1 c.c. of 50 per cent. acetic acid are added and the mixture boiled for ten minutes. While hot it is filtered, and the filtrate made up to 15 c.c. with warm water. The mixture is allowed to cool, when yellow crystals arranged in sheaves and rosettes may be observed under the high-power lens.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

INDUSTRIAL INSURANCE IN GERMANY

We have frequently referred to the conflict going on in Germany between the medical societies and the insurance organizations. An article in a recent issue of the *British Medical Journal* reviews the history of this movement most interestingly. After reminding the reader that the present situation is the result of thirty years of conflict, during which many experiments in regulation have been tried, the writer points out that the present imperial insurance order which went into force on Jan. 1, 1914, is an extremely complicated piece of legislation, designed to take the place of all previous laws on this subject.

By the new law, compulsory insurance is extended to over twenty-two million persons, while many more are given an opportunity to take advantage of the scheme if they so desire. It is estimated that in some districts nearly 95 per cent. of the inhabitants will be affected, so that the new law practically produces in Germany a state system of medical relief.

Previous to 1883, conditions in Germany were similar to those which now exist in this country and which existed in England before the passage of the national insurance act. Private practice, lodge practice, contract practice and free dispensaries were all in existence. Many members of the class which are now insured obtained the greater part of their medical attendance and services from free clinics, while many more were members of insurance societies and secured their medical services from lodge doctors at a nominal cost. As the insurance societies increased in number and power, they forced the physicians to enter into agreements clearly to the disadvantage of the latter, requiring them to treat large numbers of insured persons at an absurdly small rate, and refusing to recognize professional organizations in the discussion of conditions.

The medical profession in Germany has always been weak on account of the lack of strong central organization, the Federation of Doctors' Societies being the only organization which could be of any assistance. This body limited its efforts to sending petitions to various legislators without any definite results. In 1900 the Leipsic League was formed, and three years later the Doctors' Federation. This was the beginning of an effective organization of the medical profession. The results are shown by the fact that last fall only 150 physicians out of 32,000 in the German Empire could be induced to accept positions under the insurance societies against the advice of the Leipsic League. The medical profession of Germany has given a remarkable exhibition of self-control and discipline in its recent conflict with the insurance societies.

Last summer, previous to the new law's going into effect, the Leipsic League began the preparation of contracts for physicians with the new insurance societies. The league formulated its minimum terms as follows:

1. The right of the profession to organize to protect itself, and to regulate the conditions of service.
2. Free choice of doctor on the part of the patient, whenever possible.
3. Arbitration courts composed of an equal number of members representing both sides, for the settlement of all controversies.

It will be noted that remuneration for medical services was not included in these terms, it being understood that compensation must vary with local conditions. Negotiations between the federation of insurance societies and the medical organizations, based on the minimum terms outlined, were carried on during the fall. In October, the Leipsic League, in the hope of bringing the two sides together, formulated a tentative agreement containing the three principles adopted by the medical organizations, but making important concessions to the insurance societies, as far as their interpretation was concerned. This proposal the societies refused to accept, and the physicians refused to make any further concessions. The strength of the professional organizations gave the physicians the advantage except in three cities, Berlin, Dresden and Hamburg. On account of the local conditions, it was agreed that no general arrangements would be applicable to Berlin, and accordingly a special arrangement was made for that city. October 26, at a general meeting of the German medical profession held in Berlin, it was decided that no services should be rendered in any district unless satisfactory terms had been obtained in all. As was previously pointed out, this refusal did not apply to the care of individual patients, but only to the treatment of beneficiaries under the insurance companies; that is, physicians refused to care for any persons applying to them for treatment as insured persons, but would care for them as private patients. The possibility of a strike on the part of the medical profession alarmed the governments, and offers of intermediation were made. In some cases the local governments endeavored to force the medical profession to accept the terms offered. As January 1 approached, when the new law was to go into force, the insurance companies were confronted with the necessity of importing medical men from outside, or paying the insured person in place of furnishing him medical treatment. The first alternative was impossible as no qualified physicians were available outside of those in the organization. It was recognized that the second plan would involve heavy expense on the societies. At the eleventh hour, the medical faculties of the German universities offered their services in bringing about an understanding. They were successful in bringing the parties to an agreement, and what is now known as the Berlin agreement was accepted by both sides. It provides for the formation of contract committees composed of representatives of the medical profession and of the insurance societies; free choice of physicians within the list of employees of the insurance societies, and arbitration courts composed of an equal number of representatives of physicians and insurance societies, and leaves the determination of remuneration on a local basis. The contracts under this agreement are to run for ten years. The Leipsic League agreed to find positions for the strike-breaking physicians who had not been employed by the insurance societies. There is at present some disagreement as to the payment of indemnity for the cancellation of the contracts with these physicians which may cause trouble later on. In some districts new contracts have been prepared in accordance with the Berlin agreement; in others, the matter is still under discussion. Considerable time and patience will be required before the situation is adjusted throughout the German Empire.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 7. Sec., Dr. John Wix Thomas, Phoenix.
CANADA: Alberta, April 24. Dr. Cecil E. Race, Registrar of the University of Alberta, Edmonton.
COLORADO: Denver, April 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
IDAHO: Wallace, April 7. Sec., Dr. John F. Schmershall, Jerome.
LOUISIANA: New Orleans, May 4. Homeopathic Board, Sec., Dr. Edward Harper, 702 Macheca Bldg., New Orleans.
MINNESOTA: Minneapolis, April 7-10. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.
MONTANA: Helena, April 7. Sec., Dr. Wm. C. Riddell, Helena.
NEVADA: Carson City, May 4. Sec., Dr. Simeon L. Lee, Carson.
NEW MEXICO: Santa Fe, April 13. Sec., Dr. W. E. Kaser, East Las Vegas.
OKLAHOMA: Oklahoma City, April 14. Sec., Dr. John W. Duke, Guthrie.
RHODE ISLAND: Providence, April 2. Sec., Dr. Gardner T. Swarts, Room 315, State House, Providence.
TENNESSEE: Memphis, Nashville and Knoxville, first week in May. Sec., Dr. A. B. DeLoach, Memphis.
UTAH: Salt Lake City, April 6-7. Sec., Dr. G. F. Harding, 403 Templeton Bldg., Salt Lake City.
WEST VIRGINIA: Charleston, April 21. Sec., Dr. S. L. Jepson, 81-12th St., Wheeling.

College Adopts Higher Entrance Requirements

An official notice from the Medical College of Virginia states that beginning with the session of 1914-1915 that school will require for admission, in addition to a four-year high-school course, one year of college work, including physics, chemistry, biology and German or French; and that beginning with the session of 1915-1916 this requirement is to be further increased to two years of preliminary college work.

This makes thirty-six medical colleges, therefore, which either are already requiring two years or more of college work for admission, and which have adopted the standard, to become effective in 1915 or thereafter. There are also seven state licensing boards which have adopted two years of college work as their minimum requirement of preliminary education. These states are Colorado, Indiana, Iowa, Kentucky, Minnesota, North Dakota and South Dakota.

Florida November Report

Dr. E. W. Warren, secretary of the Florida Regular Board of Medical Examiners, reports the written examination held at Jacksonville, Nov. 12-13, 1913. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 76, of whom 55 passed and 21 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Birmingham Medical College	(1913)	84.4
University of Alabama	(1907) 86.3; (1911) 79.6; (1913) 80.8, 85, 88.3.	
Georgetown University	(1909)	82.4
Atlanta Coll. of P. & S.	(1910) 77.4, 79.3; (1913)	89.4
Atlanta Medical College	(1895)	*67.8
Atlanta School of Medicine	(1911) 75; (1912)	80.4
University of Georgia	(1913)	76.1, 78.6
Bennett Medical College	(1907)	89.1
Chicago Medical College	(1891)	78.4
College of Medicine and Surgery, Chicago	(1912)	85.6
College of Physicians and Surgeons, Chicago	(1900)	89.8
Metropolitan Medical College, Chicago	(1899)	75
National Medical University, Chicago	(1909)	77.7
Rush Medical College	(1897)	*73.6
State University of Iowa, College of Medicine	(1889)	82
Hosp. Coll. of Med., Louisville	(1884) 58;* (1907)	75.1
Kentucky School of Medicine	(1889)	*64
University of Louisville	(1881) 55.3;* (1913)	79.1
Tulane University	(1910) 78.1; (1913)	86.3, 87.4
College of P. & S., Baltimore	(1898) 82.1; (1906)	78.8
Maryland Medical College	(1911) 75.7; (1912)	81
University of Maryland	(1912)	81.3
College of P. & S., Boston	(1911)	75
Harvard Medical School	(1906)	82.7
Detroit Medical College	(1890)	*65.8
University of Michigan, Dept. of M. & S.	(1880)	77.1
Hamline University	(1896)	86
Missouri Medical College	(1894)	*68
Cornell University	(1909)	81.4
Medical College of Ohio	(1878)	*61.6
Western Reserve University	(1897)	78.8
Jefferson Medical College	(1901)	75
Vanderbilt University	(1909) 92; (1913) 82.1, 84.6, 85.7, 86.6, 90.8	
University of Virginia	(1894) 68.3;* (1911)	88
National University, Athens, Greece	(1898)	85.7

* Allowed credits for years of practice.

FAILED		
Hahnemann Hospital College, San Francisco	(1900)	71
Atlanta College of P. & S.	(1911)	57
Southern College of Med. and Surg.	(1912) 61.8; (1913) 47.1, 66.6	
University of Georgia	(1911) 55.4; (1912)	67.1
Illinois Medical College	(1904)	67.6
Hospital College of Medicine, Louisville	(1890)	49.8
American Medical College	(1910)	71.4
Barnes Medical College	(1906)	68
St. Louis College of Phys. and Surgs.	(1906)	72.6
Lincoln Medical College	(1908)	69.4
Leonard Medical School	(1911)	69
Meharry Medical College	(1913) 61.8, 71.3	
Memphis Hospital Medical College	(1912)	58.6
University of West Tennessee	(1911)	55.4
Laval University	(1898) 54.1+5†	
University of Havana, Cuba	(1912)	70.8
Non-graduate	45.7+15‡	

† Five credits allowed for years of practice.
‡ Fifteen credits allowed for years of practice.

Virginia December Report

Dr. Herbert Old, secretary of the Virginia State Board of Medical Examiners, reports the written examination held at Richmond, Dec. 16-19, 1913. The number of subjects examined in was 17; total number of questions asked, 99; percentage required to pass, 75. The total number of candidates examined was 31, of whom 18 passed and 13 failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
George Washington University	(1913)	83
University of Illinois	(1912)	75
Johns Hopkins University	(1910) 90; (1912)	90
Maryland Medical College	(1909)	75
Leonard Medical School	(1912)	75
Woman's Medical College of Pennsylvania	(1908)	82
University of Pennsylvania	(1913)	84
Medical College of Virginia	(1912) 75; (1913) 75, 75, 77, 78, 78, 79, 80, 86.	
University of Virginia	(1872)	84

FAILED		
Atlanta College of Physicians and Surgeons	(1907)	57
University of Louisville	(1912)	65
Lincoln Memorial University	(1912)	61
Medical College of Virginia	(1913) 66, 68.8, 69, 70, 70, 71, 72, 72.8.	
University College of Medicine, Richmond	(1913) 71, 72	

LICENSED THROUGH RECIPROCITY College	Year Grad.	Reciprocity with
George Washington University	(1905) (1912)	Dist. Colum.
Northwestern University	(1899)	Wisconsin
Harvard Medical School	(1908)	Indiana
Starling Medical College	(1904)	Ohio
University College of Medicine, Richmond	(1910)	W. Virginia
University of Constantinople	(1874)	Arkansas

Vermont January Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written and practical examination held at Montpelier, Jan. 13-15, 1914. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 5, all of whom passed. One candidate was licensed through reciprocity. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Yale Medical School	(1911)	85.6
Tufts College Medical School	(1913)	86.6
Columbia University, Coll. of Phys. and Surg.	(1912)	83.8
Jefferson Medical College	(1913)	88.1
University of Vermont	(1913)	93.1

LICENSED THROUGH RECIPROCITY College	Year Grad.	Reciprocity with
University of Vermont	(1912)	Maine

Colorado January Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, Jan. 6, 1914. The number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of

candidates examined was 8, all of whom passed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado (1913)		76.7, 77.9, 79, 79.7, 80, 80.7, 86.5, 87.5.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Indiana Medical College	(1906)	Indiana
Keokuk Medical College	(1894)	Missouri
Keokuk Medical College, Coll. of Phys. & Surgs.	(1904)	Iowa
Kansas Medical College	(1883)	Missouri
Baltimore University School of Medicine	(1896)	Oklahoma
Harvard Medical School	(1910)	Maryland
University of Michigan, Dept. of M. and S.	(1906)	Oregon
University of Michigan, Homeopathic College	(1888)	Colorado
Barnes Medical College	(1907)	Texas
Eclectic Medical University, Kansas City	(1900)	Missouri
Columbia University, College of Phys. and Surgs.	(1911)	New York
Medical College of Ohio	(1902)	Ohio
Miami Medical College	(1903)	Ohio
Hahnemann Med. College and Hospital, Phila.	(1885)	Penna.
University of Pennsylvania	(1913)	New Jersey

The following questions were asked:

ANATOMY

1. Discuss formation and characteristics of the spinal column. 2. Describe the mastoid cells and antrum, and locate point of surgical access. 3. Name and locate all important bony landmarks of the upper extremity. 4. Describe the axilla. 5. How are the large arterial trunks located with reference to external violence; illustrate clearly by two examples. 6. Give the course and branches of the celiac axis, naming organs which each branch supplies. 7. Describe fully the gall-bladder and system of bile-ducts. 8. Explain clearly how the uterus is supported and maintained in its normal position. 9. Describe the formation of the superficial and deep palmar arches, giving superficial landmarks. 10. Give the course and branches of the musculospiral nerve; what class of injury may impair its integrity?

PHYSIOLOGY

1. Describe the digestive action of the pancreatic juice. 2. Give three general functions of fats in the body. 3. Explain the phenomena of muscular contraction. 4. Describe the physiology of normal menstruation. 5. Name the divisions, and describe the physiology of the brain. 6. Describe the minute structure and mention the various functions of the skin. 7. Discuss the general physiologic importance of the bile. 8. Define: tidal air, lymph, enzymes, mucus and peristalsis. 9. Discuss the organs of circulation, describing (*a*) the physical or mechanical factors of the flow; (*b*) the special properties of the heart-muscles and the muscles of the blood-vessels; (*c*) the innervation of the heart and vessels. 10. Give your theory as to the cause of natural sleep; and what are its normal effects on the functions of the body?

CHEMISTRY

1. What is organic chemistry? 2. Give chemical formula of chloroform, and a brief résumé of effects of overdose. 3. How is nitrogen monoxid obtained and what are its properties? 4. What chemical reaction takes place when salol is administered? In what form and how is it eliminated? 5. How is commercial oxygen (tank oxygen) prepared? 6. What is the principal chemical reaction of sodium chlorid in the body? 7. Describe in words and chemical symbols the process of making ferric chlorid. 8. Give tests for tannin. From what source is it derived and for what is it used in medicine? 9. Give properties of, and tests for cocain. 10. What is pepsin, and how does it act on proteins?

PATHOLOGY

1. What is the pathology causing anasarca? 2. What are the pathologic causes of chronic gastric dilatation? 3. Give the pathology of gastric ulcer. 4. What are the conditions predisposing to intestinal stasis? 5. Explain the pathology of lobar and lobular pneumonia. 6. Give the morbid anatomy associated with angina pectoris. 7. Differentiate between fatty degeneration and fatty infiltration. 8. Define exudation and transudation. 9. Give the pathology of cerebral apoplexy. 10. Explain infarction, embolism, thrombosis.

N. B.—In answering these questions do not mention clinical manifestations.

TOXICOLOGY

1. If you were called to see a case with the following symptoms, what would be your diagnosis? Dryness of the throat, accompanied with tingling and numbness of the lips, throat and tongue, followed by nausea and vomiting, with pain and tenderness of the epigastrium. Dimness of vision, tinnitus aurium, frothing at the mouth, great muscular prostration, inability to walk, slow feeble pulse, difficulty of breathing, dilated pupils, convulsions and death. 2. Such being your diagnosis what would be your treatment? 3. Give symptoms of an overdose of chloroform. 4. Give symptoms of one poisoned with acetate lead. 5. Give treatment and post-mortem appearance. 6. Give signs of death by drowning. 7. Give treatment. 8. Give the symptoms of an overdose of cantharides. 9. Give your treatment. 10. Post-mortem appearance.

SYMPTOMATOLOGY

1. Name the five most common diseases that are attended by a fever of three weeks' or more duration. 2. Give the distinguishing characteristics of each disease you name. 3. Give the causes of hematuria of renal origin and distinguish them. 4. What diseases would occur to you as an explanation of a case of hematemesis? 5. What are the causes of backache in men? 6. Name three of the most common causes of dyspnea. 7. What are the symptoms of tuberculous peritonitis? 8. Name the diseases of which ascites is a symptom. 9. How is an abdominal distention due to fluid to be distinguished from that caused by tumor? 10. Describe a case of locomotor ataxia.

SURGERY

1. Give the pathology and symptoms of carcinoma of the stomach. 2. What would be the symptoms of fracture of the shaft of the femur? 3. Give the diagnosis and treatment of Colles' fracture. 4. What are the common types of dislocation of the shoulder, and how is each reduced? 5. What are the types of inguinal hernia? 6. What are the symptoms and pathology of volvulus? 7. What are the symptoms and treatment of fracture of the clavicle? 8. What are the symptoms of intracranial hemorrhage with pressure in the region of the fissure of Rolando? 9. What are the symptoms of gastric ulcer? 10. What are the symptoms of fracture of the neck of the radius?

OBSTETRICS

1. Describe mechanism in vortex presentation. 2. Describe mechanism in left occipito-anterior presentation. 3. Describe mechanism in face presentations. 4. Briefly describe breech presentation. 5. Mention the varieties of hemorrhage that may affect the pregnant woman, the parturient woman, and the puerperal woman. 6. What is placenta praevia? Give its causes, varieties and symptoms. 7. Name indications for high forceps, and (*b*) low forceps. 8. How would you diagnose the position of the child? 9. Give indications and describe in detail manual aid. 10. Give the indications and conditions requiring cesarean section.

Book Notices

ORGANIC CHEMISTRY FOR ADVANCED STUDENTS. By Julius B. Cohen, Ph.D., B.Sc., F.R.S., Professor of Organic Chemistry in the University of Leeds. Vol. II. Cloth. Price, $4.50 net. Pp. 427, with illustrations. New York: Longmans, Green & Co., 1913.

The first volume of this work was published in 1907, and covered a course of lectures in organic chemistry given by Cohen. The second volume gives special consideration to the physical properties of compounds in their relation to structure, and in general takes up the physical side of organic chemistry, being in the main a supplement and elaboration to the first volume of general organic chemistry. The scope of the book is well indicated by the following subjects, treated in the chapter on the valency of carbon, covering about forty pages: methods of determining valency, valency a variable quantity, tervalent carbon, trophenylmethyl, bivalent carbon, structure of isocyanids, cyanids, fulminic acid, acetylene compounds, nature of unsaturated groups, theory of the double bond, evidence of stereochemistry, theory of free valencies, Werner's theory of unsaturation, equivalence of carbon bonds, theories of valency, valency and physical properties, Werner's theory, valency isomerism, electrochemical theories; electronic theory, Thomson's theory, Stark's theory, theory of Abegg and Bodländer. The work is a thorough and up-to-date text-book on chemical theory as applied to organic chemistry. It is not adapted for use as a text-book in medical schools, but medical students and practitioners who want to keep up with modern chemistry can find no better book of reference.

THE PRINCIPLES OF PATHOLOGIC HISTOLOGY. By Frank B. Mallory, M.D., Associate Professor of Pathology, Harvard Medical School. Cloth. Price, $5.50. Pp. 677, with 497 illustrations. Philadelphia: W. B. Saunders, 1914.

The contents are divided into two parts: general and special histology. The first includes inflammation and repair, retrograde processes, special injurious agents and the lesions they produce, tumors; the second part takes up the changes as seen in special organs. The book is not complete. The author speaks of it as "a framework on which to build in the future if it seems to fill a want"; but so far as general pathologic histology is concerned there are no serious lacunae.

The aim of the author is to present the results of his own study, over a long period, of morbid tissues fixed and stained by the best methods. There is no discussion of the literature, no balancing or summary of divergent views. "Not the literature of a pathologic subject but perfect tissue, fixed and prepared by the best methods, affords the greatest opportunities to advance," says the author in his preface. Such single-hearted devotion runs the danger, however, of limitation of the field of vision and of missing connections, so to speak, at important junction points of pathologic histology with other branches of pathology. There are indications that the author has not wholly escaped this danger. His naive and unfortunate remark in the preface about the experimental method cannot be accounted for in any other way; and the failure to

consider fully the part played by the products of parenteral protein digestion in causing lesions, especially in infectious processes, may be cited as an instance of missing a connection. Another result, in part at least, of this self-imposed limitation of view, is seen in an unwarranted positiveness and finality of statement. This manner of expression tends to produce the impression on the student that questions are settled for all time that as yet are far from being settled (except in the mind of the author). Thus, notwithstanding the author's statement, it is not settled or accepted that Hodgkin's disease and the leukemias are tumors or that the leukocytes produce antitoxins. A slight modification of phraseology would obviate such violations of the principles of good, stimulating teaching, and yet give the author full scope to express his own views. In spite of these shortcomings, the book is noteworthy indeed because it gives us a record of the author's splendid work and observations in pure pathologic histology. The descriptions of cells, fibers and lesions are good, the language is clear, and the insistent advocacy of high technical standards is wholesome. The feature that merits and will receive general and unqualified praise is the illustrations. Here a standard has been reached that it will be difficult to excel. The question arises whether it would not have been of advantage to indicate the magnification and staining methods, especially in the case of the colored figures. Be that as it may, the large number of successful reproductions of appearances as seen in specimens prepared with masterful technic will be of the greatest help to the student of pathologic histology.

Die Vitamine, ihre Bedeutung für Physiologie und Pathologie mit Besonderer Berücksichtigung der Avitaminosen: (Beriberi, Skorbut, Pellagra, Rachitis) Anhang: Die Wachstumsubstanz und das Krebsproblem. Von Casimir Funk, Leiter des Physiologisch-Chemischen Laboratoriums. Paper. Price 8.60 marks. Pp. 193 with 40 illustrations. Wiesbaden: J. F. Bergmann, 1914.

The name "avitaminoses" is suggested for the diseases caused by lack of vitamins in the diet. The best understood diseases of this kind are beriberi and scurvy. The author argues strongly in favor of placing pellagra among the avitaminoses. He also presents interesting ideas and speculations in regard to the part that vitamins possibly play in rickets, in growth, and in the development of cancer. No doubt some readers will find the tone of the book occasionally rather self-assertive; nevertheless, it is a stimulating presentation of the facts and the outlook in this new field in the pathology of nutrition.

Dental Electro-Therapeutics. By Ernest Sturridge, L.D.S., D.D.S. Cloth. Price, $2.75 net. Pp. 318, with 154 illustrations. Philadelphia: Lea & Febiger, 1914.

This work is divided into two parts. The first is devoted to the general principles of electrophysics so far as a knowledge of these principles is necessary to a clear understanding of the use of the various types of electrotherapeutic apparatus. There are several works of a similar nature on the market, but none of them cover the same field as this volume. The author carefully explains different appliances and the methods by which they may be used in dental practice. The second part of the work deals with the application of electrotherapeutics in anesthesia, the bleaching of teeth, neuralgia, pyorrhea alveolaris and other diseases in dental practice. The work should be in the hands of every dentist who is interested in this particular form of treatment.

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H., Consulting Sanitary Adviser to H. M. Office of Works, and Henry R. Kenwood, M.B., F.R.S., D.P.H., Chadwick Professor of Hygiene in the University of London. Fifth Edition. Cloth. Price, $3.50. Pp. 736, with illustrations Philadelphia: P. Blakiston's Son & Co., 1913.

The last issue of this standard work appeared in 1911. Since that time the book has been carefully revised and new matter introduced, notably a portion on immunity from Elizabeth Fraser's book on this subject. The work is complete, well illustrated and a safe and advisable investment for the physician who is at all interested in the subject.

Miscellany

Bichlorid of Mercury Tablets and the Public

Reports of poisoning by mercuric chlorid tablets are continually appearing in the newspapers. This shows that notwithstanding the repeated warnings as to carlessness in the use of the popular "antiseptic tablets," and the prolonged, excruciating pain suffered by this method of suicide, the tablets still remain, as has been expressed, "a household commodity" easily obtainable from any drug-store. It is true that the public has been aroused to an extent and efforts have been made in several legislatures to enact laws governing the form and the method of marketing these tablets. It is pointed out by M. I. Wilbert, however, in *Public Health Reports*, Nov. 14, 1913, that there is sufficient legislation at present, which, if enforced, would serve as a reasonable safeguard in connection with the sale at retail of this poison. Thirty-eight states include corrosive sublimate specifically in the laws designed to restrict the sale of poisons, and only Utah exempts corrosive sublimate tablets from registration in the poison register. The fact that this poison is named in the list of poisons to be registered by druggists when sold at retail in Pennsylvania led the governor of that state to veto a special act prohibiting the sale at retail of mercury bichlorid except on a physician's prescription. A greater evil in connection with the sale of this poison, as pointed out by Wilbert, is the custom of manufacturers of pharmaceutical preparations in the United States of marketing tablets containing corrosive mercuric chlorid under a name—usually "antiseptic tablets"—without properly indicating the nature of the materials contained therein. Thus, an examination of the current price-lists of five of the larger manufacturers of pharmaceutical preparations in the United States revealed the startling information that not one of them properly designated the presence of this deadly poison in "antiseptic tablets". In the lists referred to, under "corrosive sublimate," "mercuric chlorid" or "mercury bichlorid," cross-references were found to "antiseptic tablets". Under the last designation, without any qualifying words, tablets containing corrosive mercuric chlorid were found in sixteen varying sizes, five different shapes and five different colors, while under the designation "antiseptic tablets," with various qualifying words, as "alkaline," "alkaline improved," "alkaline effervescent," "clover," "detergent," etc., were found tablets which contained comparatively innocuous materials. It will thus be seen that under the simple name of "antiseptic tablets" the layman might unintentionally purchase deadly corrosive sublimate. It is highly probable that the vast majority of persons who buy "antiseptic tablets," as Wilbert says, in "pounds, if not tons . . . annually for other than medicinal purposes" do not know that they contain a dangerously poisonous substance. The fact that they are given a distinctive shape or color does not serve to protect the purchaser if he is uninstructed as to their contents. On the contrary, as Wilbert says, this "would at best tend to elaborate on the misuse of tablets of this kind, rather than to prevent accident, or their use as a poison for suicidal purposes." In fact, they are now sometimes asked for under the name of "blue" tablets, etc. Undoubtedly the fact that they are tablets, easily obtainable, under a totally misleading name, together with the agitation concerning them and their popular use, only serves to increase their sale. The responsibility of the manufacturers in putting out these tablets with insufficient warning as to their dangerous character is great, and should be met in some satisfactory way. The inclusion in the Pharmacopeia of a preparation of mercuric chlorid in tablets under its proper name, with a distinctive form and wrappings, and with a warning as to their poisonous character, such as is provided in the German Pharmacopeia, to which we have heretofore referred (The Journal, April 5, 1913, p. 1083), would be a step in the right direction. Physicians could then prescribe or issue only this preparation, and the public would gradually be educated in regard to this poison. In this

connection it should be said that in the first instance the physician is probably largely responsible for popularizing this poison and is deserving of at least some of the censure. As shown in reports published in THE JOURNAL from time to time (April 9, 1910, p. 1203; April 30, 1910, p.1459; June 4, 1910, p. 1867; Aug. 26, 1911, p. 755; Jan. 11, 1913, p. 147; Aug. 23, 1913, p. 606; Feb. 14, 1914, p. 535), these tablets have been prescribed or given to patients for antiseptic purposes, without sufficient caution as to their poisonous character, and such acquaintance with them, together with the ease with which they are purchased has led to their popular use.

Shipment of Poisons in the Mails

Confusion has arisen in regard to recent interpretations by the post-office authorities of the statutes and regulations concerning the transmissions of poisons and articles containing poisons through the mails. In February a complaint was filed with a United States commissioner in New York against the New York agent of one of the large pharmaceutical manufacturing houses on account of the shipment from New York to Boston by parcel post of a package of 500 tablets, each containing 1/24 grain of heroin, with small quantities of two other (innocuous) ingredients. In connection with this case a statement is quoted of an assistant district attorney to the effect that it is a crime under the laws of the United States "to mail heroin even to physicians." As is known, the Food and Drugs Act of June 3, 1906, respecting cocain, morphin, heroin, etc., requires that the proportion or quantity of any of these ingredients be stated on the label; but this has no relation to their shipment through the mails. Section 217 of the U. S. Criminal Code concerning unmailable matter says:

"All kinds of poisons, and all articles and compositions containing poisons . . . whether sealed as first-class matter or not, are hereby declared to be non-mailable matter, and shall not be conveyed in the mails or delivered from any post-office or station thereof, nor by any letter-carrier; but the Postmaster-General may permit the transmission in the mails, under such rules and regulations as he shall prescribe as to preparation and packing, of any articles hereinbefore described which are not outwardly or of their own force dangerous or injurious to life, health or property."

In July, 1913, a regulation (superseding a previous one annulled) was promulgated embodying the requirements of the foregoing section of the statutes in regard to the mailing of "medicines and anesthetic agents which are not outwardly of their own force dangerous or injurious to life, health or property." This regulation leaves unsettled the question of the mailing of medicines such as the package of heroin tablets in question, in that the term "poison" has never been exactly defined. One attempt to secure a ruling on the word "poison" with reference to the transmission of drugs through the mails brought the following from the Post-Office Department:

"The Department has fixed no specific proportions of poisons which mailable medicines may contain, but it may be stated that medicines which contain sufficient poison to render the whole compound a poison are not mailable."

Another communication from the Post-Office Department on the same subject said:

"Medicines containing a small proportion of poison may be sent in the mails, but medicines containing a sufficient quantity of poison as to render the compound a poison are not mailable."

These replies or rulings manifestly leave the question in a very uncertain state, and a definite ruling is required. In the meantime the safe course is to refrain from sending through the mails any preparation containing narcotic or other drugs which in any quantity might be "dangerous or injurious to life, health or property." Obviously some more liberal interpretation of the statutes relating to such drugs as morphin, heroin, cocain, etc., is needed; otherwise country physicians and others who must depend on the mails for quick transportation of medicines in emergencies will be inconvenienced. These drugs are not, of course, prohibited from transmission by means other than the mails. In the outcome of the suit mentioned in the beginning of this article it is hoped that the question of sending such drugs as heroin tablets through the mails may be settled.

A Hopeful Experiment in the Treatment of Tuberculosis.—An experiment in the management of tuberculosis among poor families in New York has given gratifying results in many directions during the first year of its trial. It has been conducted under the supervision of the New York Association for Improving the Condition of the Poor. In the printed report (Publication 78) it is called "The Home Hospital Experiment," which accurately describes the idea. The combined treatment of poverty and tuberculosis by removing to better surroundings whole families in which the disease was found, either in the bread-winner or the mother—or in some instances in practically every member of the family—is the essential part. More specifically it was desired to demonstrate by a three-year experiment that sanitary housing, ample sunshine and fresh air, good and abundant nourishment, freedom from undue work and worry, reasonable segregation, skilful medical care and constant nursing supervision will prevent the spread of tuberculosis from the sick to the well members of a family, especially preventing the infection of the children. The experiment aimed to cure those in the early stages of the disease, to secure improved health and larger earning capacity to patients whose cases were moderately advanced, and to complete, at least in instances, the rehabilitation of the family, physically, economically and socially. During the first year the Home Hospital occupied twenty-four units of one of the modern tenement buildings in New York, and twenty-seven families, selected after careful investigation, containing 135 individuals with seventy-nine patients or suspects, were cared for. All members able to do so were required to work and to contribute to the support of the family. A depot containing all supplies needed was established, and goods were sold at practically cost prices. Direction and advice were given as to the amount and kind of supplies purchased in order to furnish abundant and proper nourishment for all the members of the families. Supervision was exercised over matters of work, rest, recreation, personal hygiene, etc., and medical and nursing attention were provided as necessary. The results of the experiment, it is believed, proved the feasibility and value of the plan. Eleven of the families, containing twenty-three patients, twelve of whom were wage-earners, were discharged. Six of the eleven families were rehabilitated physically, socially and economically, to the extent that each member was restored to health; all had learned the lessons of personal hygiene; the mothers had learned valuable lessons in home economy, as how to buy to advantage, what to cook and how to prepare it to secure the maximum of nourishment at minimum cost, and each family was able and earned sufficient to support itself under normal conditions. When admitted, four of the families were almost absolutely dependent, with the average weekly income of all a little in excess of $6. When they moved away from the hospital their average incomes had increased to almost $15 a week. The results in the infected cases were said to compare favorably with those of sanatorium treatment. In four cases there was no progress. Three of these patients were dismissed for refusal to follow advice; the other patient, with an advanced case, died. In eighteen positive cases in the hospital six months or over in which the patients followed advice and direction, eleven, or 61 per cent., were apparently cured; in four, or 22 per cent., the disease was arrested, and in two, or 11 per cent., there was much improvement. The average increase in weight of each adult during the average residence of 233 days was 9.9 pounds. The increase was greatest during the first two months. In most instances the children, who were practically all underdeveloped on admission, at the end of six months had reached a weight normal for their age, and had become wholesome, bright-eyed and happy. The cost of the experiment was considerably less than expected, but it was estimated that there was a saving of

$11,000 over the cost of caring for the same number in sanatoriums, preventoriums and hospitals. It was found also, incidentally, that from $1,100 to $1,200 is the minimum income sufficient to maintain a normal standard of living for an average family of five in the Borough of Manhattan. The report gives full details as to the method of selecting the families and all other matters pertaining to the experiment, which was a highly suggestive and practical one, and it is full of possibilities in the public handling and management of this wide-spread disease. The experiment is to be continued.

Radium and Ethics.—The employment of radium in the treatment of cancer is the latest medical innovation to receive the sort of newspaper discussion to which we have often referred as misleading and injudicious. The *Edinburgh Medical Journal* (The Radium Boom, editorial February, 1914) offers drastic criticism of the ethics of recent newspaper comment on radium. It cites interviews printed in the London *Times* with Sir Frederick Treves, Sir M. Morris and Captain H. Pinch concerning the Radium Institute, with which they are connected, and discusses particularly an interview with Dr. Lazarus Barlow in which the latter makes some very optimistic statements concerning radium in the treatment of cancer, in comparison with which the statistics of the Middlesex Hospital for 1912 and 1913 with and without the use of this agent are quoted. The criticism, also printed in the *Times* two days later, by members of the surgical staff of the Middlesex Hospital, that their experience did not correspond with the remarks of Dr. Lazarus Barlow, leads the *Edinburgh Medical Journal* to remark: "This discussion of the curative value of a particular substance in a particular disease in the columns of the public press is most unseemly, and it seems to us it is time for the professional papers to protest." Referring more particularly, perhaps, to the enthusiastic statements of Sir Frederick Treves and his associates concerning the efficacy of bottled radium emanations in the treatment of such formidable conditions as rodent ulcer, carcinoma, sarcoma, keloid and arthritis deformans, and their availability at any point in the United Kingdom, the *Journal* says: "Is there much distinction between the advertisements of any catchpenny patent cure-all and such announcements as these? Owing to the marvelous physical properties of this substance [radium], the public is only too ready to believe any tale as to its value as a cure for gout, rheumatism and cancer, but the medical profession should absolutely refrain from publicly encouraging such notions, if for no other reason than to prevent the false hopes that may be raised by newspaper interviews, which are often misleading to the laity, and require interpretation by an expert. It is surely incumbent upon us as a dignified scientific body, one of whose mottoes is *Noblesse oblige*, to discountenance and discourage all such methods of advertisement." Grievous as are the ethical and advertising shortcomings of medical newspaper interviews, we feel that their most serious aspect is in the unjustifiable hopes of cure that are bound to be raised in hopelessly incurable persons.

Cleanliness in the Preparation and Serving of Food.—A committee has been appointed by the Civic Federation, of which Mr. Vincent Astor is chairman, for the study of sanitary and hygienic food control, and to encourage inspection of the conditions under which foods are produced. Such foods as milk, butter, fish and shell-fish, which are liable to carry germs of tuberculosis, typhoid fever, measles, scarlet fever, etc., will be given special attention. It is believed that the workmen handling these products at their origin should be medically inspected. In commenting on the purposes of this committee, E. E. Rittenhouse, of the Life Extension Institute, insists that this inspection and care should include also those who handle the food at the point of consumption. "For what will it avail," he says, "to have pure and healthful food delivered at homes, hotels, etc., if it be contaminated by persons who serve it to the consumers." He believes that householders are not so careful as are hotels and restaurants to see that the employees who prepare their food are in good health, and that they are cleanly in their habits and methods of preparing foods, and probably few or none of them realize the need of sending their servants to the family doctor occasionally to see if they are jeopardizing the health of the family by some developing malady.

Technic of Examination for Hookworm Ova.—A method of preparing and staining specimens for examination for hookworm ova is described by Mark J. White, M.D., in *Public Health Reports* as follows: Agitate about 0.5 gm. of feces with 5 or 6 c.c. of water in a small test-tube. Strain through two layers of gauze to remove particles of feces and wash the residue with a sufficient quantity of water so that the total filtrate will fill a centrifuge-tube. Add to the filtrate and allow to diffuse therein 5 drops of a solution of toluidin blue in a 2 per cent. aqueous solution of phenol. Centrifuge for two minutes. Decant all supernatant fluid. Place two oeses of the sediment on a slide and spread by gentle pressure with a cover-glass. Examine with a magnification of 105 times in a subdued light (oc. 4, ob. 3 Leitz or equivalent). The dye imparts blue and purple tints to the fecal material and a light-brown tint to the shells of the hookworm eggs. The specimens may be mounted by rimming with paraffin.

Medicolegal

Liability of Employer for Surgeon's Malpractice—Admissibility of Evidence

(Simon vs. Hamilton Logging Co. (Wash.), 136 Pac. R. 361)

The Supreme Court of Washington says that it has held that a company employing a surgeon for the benefit of its men, and without profit to itself, is not liable in any event, but that the measure of its duty is to exercise reasonable care in the selection of a competent surgeon. The court thinks that the rule is supported by reason, as well as by the better authority, and it has determined to adhere to the rule without reopening the discussion, although it was invited to review and distinguish its cases, and to declare the contrary rule.

An instance of alleged malpractice by the surgeon occurring some six years before the contract of employment was entered into was clearly too remote, and proof thereof was properly rejected by the court, to show that the surgeon was incompetent and unskilful. Nor can incompetency, as a rule, be shown by proof of a single act of negligence, but it is proper to show repeated acts of carelessness and incompetency as touching the question of whether the employer knew, or might have known, that the surgeon was incompetent, if it had exercised ordinary care in his selection or retention.

What the surgeon in question may have done or omitted to do after he ceased to treat the plaintiff could not be held to bind the logging company, even though knowledge had been brought home to it, for the very act may have been the culminating circumstance that made his acts subject to the common knowledge of men in and about Hamilton. The company's liability must rest on a want of due care in the selection of the surgeon, or in its negligence in retaining him at the time the plaintiff was treated. This argument applied also to an offer to prove that at the time of the trial, the surgeon's reputation was that of an unskilful and incompetent person. It must be remembered that the evidence of the surgeon's reputation as to competency, in so far as it was admissible here, was not for the purpose of proving his negligence at the time of his treating the plaintiff, but was for the purpose of proving the negligence of the logging company in employing him after knowledge thereof on the part of the company. What the surgeon may have done after ceasing to treat the plaintiff clearly had nothing to do with influencing the logging company, one way or the other, in employing or continuing the employment of the surgeon up to the time he treated the plaintiff.

Nor was the testimony of non-professional witnesses competent to prove that the surgeon had negligently and unskilfully treated two confinement cases, four and eight months, respectively, prior to the time of his treating the plaintiff, proof of no facts having been offered, from which it might be inferred that the logging company operating two miles away had, or might have had, knowledge of those cases, if indeed incompetency as an obstetrician would, in any event, be held to imply incompetency in the treatment of men employed in a logging camp.

Relative Weight of Medical and Lay Testimony as to Mental Capacity

(Austin vs. Austin (Ill.), 103 N. E. R. 268)

The Supreme Court of Illinois holds that the testimony of medical witnesses, who testified on behalf of the contestants of a will, was not entitled to greater weight than the testimony of non-medical witnesses, who testified for the proponents of the will, as to the mental capacity of the maker of the will. The court says that it has never been held in Illinois that the testimony of physicians on the subject of mental capacity is entitled to any greater weight than that of laymen who are men of good common sense and judgment. In *Carpenter* vs. *Calvert*, 83 Ill. 62, it is said: Physicians may be regarded experts as to the condition of the body, and as to what diseases tend to impair the mind, but it does not follow, from the mere fact that they are physicians, that they are any better judges of the degree of mental capacity than other men of good common sense.

Board of Health Creature of Statute

(Village of Carthage vs. Colligan (N. Y.), 144 N. Y. Supp. 468)

The Supreme Court of New York, Appellate Division, Fourth Department, says of a village board of health that it was purely a creature of statute, having only such limited powers as might be delegated to it by the legislature, and such incidental powers as would enable it to effect the purposes for which it was created. While its efforts toward the suppression of insanitary conditions must be applauded, nevertheless, when it seeks to impose penalties and collect them, it is held to a strict compliance with every statutory preliminary leading up to the collection of the imposed penalty. If in any particular there is a deviation from the path which the legislature laid down for it to travel, such omission is a fatal one, of which the accused may take advantage.

Sale of Practice and Good Will in Bankruptcy Proceedings

(In re Myers (U. S.), 208 Fed. R. 407)

The United States Circuit Court of Appeals, Seventh Circuit, holds that the medical and surgical practice and good will of a physician are not subject to sale in bankruptcy proceedings. The court says that in this case the bankrupt petitioned for a review and revision of an order in bankruptcy, directing the sale by the trustee in bankruptcy, among other things, of "the medical and surgical practice and good will of said bankrupt, Jacob Myers, together with the leasehold interest of said bankrupt in and to the office formerly occupied by Dr. S. Lewin (one of the bankrupt's creditors), and now occupied by said bankrupt as a doctor's and surgeon's office." It appeared that the bankrupt was a medical practitioner; that he purchased the location and good will of Dr. Lewin and was engaged in practice thereunder; that his indebtedness to Dr. Lewin arose out of such purchase. The right of the trustee to take and sell whatever property interest might remain out of this purchase from Dr. Lewin was neither challenged nor questionable. But the terms of the order did not support the contention of counsel for the trustee, that such property interest was intended by the above-mentioned provision thereof as the subject-matter of the sale. Whatever may have been the purpose, the "medical and surgical practice and good will of said bankrupt" were plainly specified as its subject-matter, and no doubt is entertainable that the provision to that end was unauthorized. It comprised practice and good will attributable to the personality, reputation, or skill of the bankrupt, which was entirely of a personal nature and not subject to involuntary sale for the benefit of creditors or otherwise. It goes without saying that patients of the bankrupt, either present or prospective, could not be required to transfer their treatment or allegiance to another practitioner. So, the only force of the sale thus proposed would be to deprive the bankrupt of the exercise of his profession in any locality; and such deprivation is plainly unauthorized in these proceedings. The petitioner, therefore, was entitled to a modification of the order of the district court, to exclude the above-mentioned provision for the sale of the "practice and good will of the bankrupt," and it is ordered that modification be made accordingly. The order may be amended, however, by the district court, if so advised, to authorize the sale of any subsisting rights acquired by the bankrupt under his purchase from Dr. Lewin, and any outstanding accounts or credits which may be subject to sale, together with the leasehold interest described in the order.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, ATLANTIC CITY, JUNE 22-26.

Alabama Medical Association, Montgomery, April 21-24.
Am. Assn. of Genito-Urinary Surgs., Stockbridge, Mass., May 15-16.
Am. Assn. of Pathologists and Bacteriologists, Toronto, Apr. 10-11.
American Dermatological Association, Chicago, May 14-16.
American Neurological Association, Albany, May 7-9.
American Ophthalmological Society, Hot Springs, Va., May 12-13.
American Surgical Association, New York, April 9-11.
Arizona Medical Association, Tucson, April 21-22.
Association of American Physicians, Atlantic City, May 12-13.
California State Medical Society, Santa Barbara, April 14-16.
Florida Medical Association, Orlando, May 13-15.
Georgia Medical Association, Atlanta, April 14-16.
Iowa State Medical Society, Sioux City, May 13-15.
Kansas Medical Society, Wichita, May 6-7.
Louisiana State Medical Society, New Orleans, April 20-23.
Maryland Medical and Chir. Faculty, Baltimore, April 28-30.
Mississippi State Medical Association, Columbus, April 14-16.
Missouri State Medical Association, Joplin, May 12-14.
Nat. Assn. for Study and Prev. of Tuberculosis, Washington, May 7-9.
Nebraska State Medical Association, Lincoln, May 12-14.
New Hampshire Medical Society, Concord, May 13.
New York State Medical Society, New York, April 28-30.
North Dakota State Medical Association, Grand Forks, May 13-14.
Ohio State Medical Association, Columbus, May 5-7.
Oklahoma State Medical Association, Guthrie, May 12-14.
South Carolina Medical Association, Florence, April 14-16.
Tennessee State Medical Association, Memphis, April 7-9.
Texas State Medical Association, Houston, May 12-14.
West Virginia State Medical Association, Bluefield, May 13-15.

THE NEW YORK NEUROLOGICAL SOCIETY

Regular Meeting, Held Feb. 3, 1914

The President, DR. SMITH ELY JELLIFFE, in the Chair

Cerebrocerebellar Diplegia

DR. L. PIERCE CLARK: The case was that of a boy aged 10 whose family history was negative aside from the mother having suffered from a severe shock and an incipient abortion before the birth of the child. The child weighed 7 pounds at birth, was puny and delicate; was a restless, crying baby. He walked at 3 years, with a stumbling, wide, straddling gait, and often dragged his feet. He talked at 3 years of age, but the speech continued to be stammering, indistinct and slurring. His balance was always poor, and he suffered frequent falls. The boy continued to show dysmetria, ataxia and hypotonia, which was partially recovered from at the time the first examination was made last autumn. The boy at that time was slender and poorly nourished, and was about three years under growth. The Binet-Simon test showed that he was about 6 years of age mentally, but in motor coordination and control he was not equal to a child of 2. The physical examination showed extreme flaccidity in all the joints, especially marked in the upper extremities. The case illustrates that probably much of the incoordination of

the non-organic feeble-minded may really be dependent on cerebellar defects as well as a defective cerebral development. The boy improved under training treatment.

DISCUSSION

DR. W. B. NOYES: About two months ago I saw a boy aged 10, suffering from a certain amount of retardation, a spasticity of the lower extremities, ataxia, an increase of the knee-jerks, an exhaustible ankle-clonus and a Babinski on one side and not on the other, with other reflexes normal. There were choreiform movements closely resembling Sydenham's chorea, but in the opinion of the examiners it was a motor condition secondary to the general condition. The boy showed a very marked hypotonia of the fingers and elbow-joints, but no hypotonia of the lower extremities. The mental condition corresponded to two years' retardation by the Binet-Simon scale, but in general he might be termed an odd rather than a feeble-minded or even a subnormal child. Many tests for mental functions he performed extremely well. His speech was of an infantile type, associated with a deformed palate. According to the mother, there had been a serious asphyxia at birth, lasting nearly half an hour. He did fairly well during his first years, except in a decided delay in learning to talk and walk. She did not notice any stiffness or staggering until he was 4 years old. After an attack of scarlet fever at 5, this became much more marked, and by 7 he showed decided spasticity, ataxia and mental defect. He never learned to control the bladder or rectum normally until a year ago. The peculiar history of progression suggested Friedreich's disease, even more than Little's disease. The extent of the hypotonia almost reached the degree of muscular atrophy of the fingers, suggesting the syndrome of amyotrophic lateral sclerosis. Marked improvement in intellect, speech and gait followed appropriate treatment of massage and tonics.

Vital Staining in Its Relation to Chemotherapy

DR. F. TILNEY: It has been a question in my mind by what avenues salvarsan reaches the nervous tissues, if it arrives there at all. The theory that salvarsanized serum introduced intraspinally penetrates into the depths of the nervous system by means of the lymphatics is based on an assumption in support of which there is little or no anatomic fact. In view of the facts that the vital stains in Ehrlich's hands were the basis of chemotherapy, that such stains and salvarsan are closely allied in their chemotaxis, and also that Ehrlich has found trypan red (a vital stain) to be a trypanocide, it seemed justifiable to use these stains on living animal tissue and especially to observe what happens when *intravitam* injections are made intraspinally, intravenously, intra-arterially and subcutaneously.

The cat was selected as the first animal to be observed, and the vital stain, trypan blue, used. The first experiment was the injection into the subarachnoid space of 0.1 per cent. solution of trypan blue. Post mortem it was found that the dura mater had been stained intensely. The brain was stained diffusely. The other organs of the body were not stained. Microscopic preparations showed that the trabeculae of the pia mater extending into the cord and brain as well as the walls of the blood-vessels were stained. It is apparent therefore that trypan blue gets into the substance of the nervous tissue along the lines of these trabeculae and by the blood-vessels. The ganglion cells and nerve fibers were not stained. The next experiment was an intra-arterial injection, which showed a marked staining of the intestines, liver, spleen, skin, kidneys and conjunctiva, but no stain in the central nervous system or its covering. The third injection was made intravenously. The animal was allowed to live for twenty-four hours, as in all the experiments. The dura mater, pia and pituitary body were distinctly stained, although not so intensely as by the intraspinal injection. Frozen sections of this material showed that none of the stain had penetrated into the cord. The last animal was injected subcutaneously, and while it showed the usual staining of the organs, no region or part of the nervous system showed any stain whatever. Undoubtedly the intraspinal introduction of salvarsan seems to be the method of selection, and if the intravenous method is used, large doses must be employed to obtain corresponding results.

DISCUSSION

DR. I. STRAUSS: Two years ago I injected a dog with a 1 per cent. solution of collargol into the subarachnoid space, using a fair quantity. The dog lived five or six hours. To my surprise, I found the drug not only throughout the subarachnoid space but also in the central canal of the cord. Clinical experience and a study of the spinal fluid shows that when intravenous injections are given the drug reaches the central nervous system.

DR. M. ROSENBLUTH: The results obtained with methylene blue correspond to the degree of concentration of the dye that reaches the central nervous system; therefore in routine work with this method it is always important to be sure that the return of fluid from the veins of the injected animal is well colored with the dye, to make sure that all the intracranial vessels are engorged with the dye; if we wish a more positive elemental stain by this method, we actually sprinkle the powdered methylene blue on the living neural substance *in situ*. The uncertainty of the stain is due not to any uncertainty of chemotaxis but to the uncertainty of bringing the reagent to the tissue to be acted on. That the venous route is feasible is shown by the fair proportion of successful stains by this method, especially if one is careful in fully oxidizing by good exposure to the air.

Four patients received salvarsan treatment, about fourteen intravenous injections; the cerebrospinal fluid was examined for arsenic and it was found in 80 per cent. of the tests.

DR. S. E. JELLIFFE: Arsenic has been found in the central nervous system following the injection of a heterologous serum from another patient. The patients had not received any arsenical compound other than the serum from another treated patient, and yet this admittedly small amount of arsenic had been sufficient to be determined as arsenic in the cerebrospinal fluid.

Barany's Pointing Tests and Theory of Cerebellar Localization

DR. PHILIP D. KERRISON: Barany believes that in the cerebellar cortex there exists definite centers, the functional preservation of which has to do with the individual's ability to move the various joints correctly in certain places without the aid of sight. For each joint there are separate centers exerting tonuses in different directions. When one of these centers is destroyed or its function suppressed, the joint involved falls under the control of the opposing intact center, and when the patient is blindfolded and the pointing accuracy tested, the affected limb deviates in the direction opposite to that of the tonus of the destroyed or suppressed center. This is called spontaneous deviation. Normally, irritation of either vestibular apparatus—for instance, by the caloric test—causes deviation of both arms in the direction opposite to the induced vestibular nystagmus. This is called the normal vestibular reaction. In the case of a cerebellar lesion giving rise to a spontaneous outward deviation, as of shoulder- or wrist-joint, appropriate vestibular irritation results in the normal deviation, or reaction, in the arm or wrist corresponding to the sound cerebellar hemisphere, but is without influence on the arm or wrist corresponding to the cerebellar lesion.

DISCUSSION

DR. L. P. CLARK: It is no longer a point of supposition that the cerebrum may and does take on the function of the cerebellum. Sufficient evidence has been brought forward to show that the frontal and parietal lobes compensate for cerebellar defects to an astonishing degree. One case, selected from the literature, showed that in a man who had died of some intercurrent disease, the whole cerebellum was found to be no larger than an English walnut, and yet he had no ataxias or incoordination of any sort. This very factor of brain compensation, especially as regards the cerebellum, would complicate Barany's conclusions considerably, as at present there is no way of knowing whether one is drawing distinctly on a defect in cerebellar tonus, or a cerebral defect of the same function.

DR. M. ROSENBLUTH: In considering cerebellar function it is important to bear in mind the work of Luciani, who pointed out that the cerebrum took up the functions, in part, of the cerebellum, as evidenced by the abolition of these activities by destruction of the cerebrum when all of the effects of the cerebellar disturbance had to a degree disappeared.

DR. F. TILNEY: Bolk attempted to demonstrate the functional localization of the cerebellum on the basis of comparative anatomy. His idea is that the central part of the organ had to do with the coordination of axial and paraxial musculature, including the muscles of the eye, tongue, pharynx, larynx and trunk; the lateral portions of the organ have to do with the appendicular musculature, the arms and legs, particularly in animals which use these parts in acts which are not bilaterally coordinated. Rynbeck confirmed this localization by animal experiments and came to the same general conclusions as Bolk, both coinciding very closely with Barany in his observations on the human subject. It is a question whether Barany's conception of "tactile orientation" can, in any sense, be accepted as a definite cerebellar function.

DR. W. TIMME: In the last six or nine months Barany made some interesting experiments on students by poisoning them with various drugs, chief among which was alcohol in the form of cognac. This was administered in one dose of 200 gm., and the various tests for cerebellar activity were made a few minutes thereafter, lasting for one or several hours, depending on the condition of the student. In many cases Barany found a simple exaggeration of the normal outward and inward pointing deviations, and only a slight change in the nystagmus, sometimes without vertigo; but of chief interest is the finding that the perception of turning after the turning is completed is much diminished from the normal, so that the tendency to a loss of equilibrium and to fall in various indeterminate directions is increased. With a normally functioning cerebrum, these perceptions of motion after the motion is over persist longer and so guard the individual against falling. These experiments show the interrelation of the cerebrum and cerebellum.

DR. I. ABRAHAMSON: The pointing test is valuable not only in cerebellar disease but also in involvement of the parietal lobes. In two cases of parietal neoplasm overreaching occurred in both, but the directions were different—opposed to each other.

Jung's Libido Theory in the Light of the Bergsonian Philosophy

This paper by DR. BERTHA HINKLE will appear in THE JOURNAL.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Boston Medical and Surgical Journal

March 12, CLXX, No. 2, pp. 369-404

1 Vaccination Efficiently Performed. E. F. Cody, New Bedford.
2 *Correlations of Cerebrospinal Fluid Examinations with Psychiatric Diagnoses. M. E. Morse, Worcester.
3 Two Cases of Lung Abscess Cured by Operation. W. Whittemore, Boston.
4 Prostatectomy without Irrigation. A. E. Rockey, Portland, Ore.
5 *New Operation for Hip Contractures in Poliomyelitis. R. Soutter, Boston.

2. Correlations of Cerebrospinal Fluid Examinations with Psychiatric Diagnoses.—In reviewing 140 cases Morse found that among eighty patients in whom the diagnosis of paresis was made definitely, or in whom a suspicion of it was entertained, in fifty-seven at the most (71 per cent.) the diagnosis appears to be confirmed after examination of the serum and cerebrospinal fluid. In the sixty cases in which the diagnosis was made definitely, it seems to be substantiated by serologic and cytologic evidence in fifty cases, or 83 per cent.

The cases which have been found most difficult to differentiate from paresis without examination of the serum and cerebrospinal fluid are cerebral syphilis and arteriosclerosis and Korsakow's psychosis. In regard to cerebral syphilis, however, although the findings in the serum and cerebrospinal fluid are supposed to be sufficiently characteristic to permit a differential diagnosis from paresis, in the individual case they frequently leave one in doubt.

In a large insane hospital Morse believes that the routine examination of the serum and cerebrospinal fluid finds, perhaps, its most immediate value in the rapid confirmation or elimination of the suspicion of paresis in new patients and in revision of the diagnoses of certain patients admitted in pre-Wassermann days.

5. New Operation for Hip Contractures in Poliomyelitis.—The following operation has been devised by Soutter: first a longitudinal incision is made 3 inches long, parallel with the long axis of the body, with its middle 2 inches posterior to the anterior superior spine. It is carried down to the fascia. By retracing the subcutaneous tissue the fascia is exposed from the anterior superior spine back to the trochanter. Second, the fascia is incised at right angles to the skin incision, cutting all its fibers transversely from the anterior superior spine back to the great trochanter. Third, the skin incision is next retracted in such a way as to expose the anterior superior spine. By means of an osteotome, the attached muscles and fascia are removed from the anterior superior spine subperiosteally on the inside, on the outside and below; they are all pushed downward.

The hip is hyperextended backward, pulling the tissues down with it. If the tension is great the soft tissues are pushed down by means of gauze or blunt dissector, clearing off the periosteum and soft tissues from that part of the pelvis below the anterior superior spine.

Following the operation a plaster-of-Paris bandage is applied to the whole leg (contractures of the knee and ankle may be corrected first). The hip is hyperextended in order to correct the lumbar lordosis usually present in these cases. It is also adducted slightly to stretch the lateral contractures. The plaster of Paris extends from the nipple line in front and from the lower waist behind to the toes of the foot operated on. A window may be cut in the plaster over the abdomen. The patient is put on a Bradford frame elevated to allow the legs to drop to a lower level than the hips and shoulders. The advantages of this method of procedure are said to be as follows: There is practically no bleeding, the operation does not require much surgical skill and the contracture is definitely relieved. The muscles are not cut across; their periosteal attachment is simply moved 1½ or 2 inches downward. The anterior superior spine will be found to be practically moved downward.

California State Journal of Medicine, San Francisco

March XII, No. 3, pp. 87-128

6 Calculus in Bladder. H. Meyer, San Francisco.
7 Systolic Apical Murmurs. A. H. Dunn, San Diego.
8 *Sources of Error in Blood-Pressure Measurements. E. S. Kilgore, San Francisco.
9 Case of Hemoglobinuric Fever. H. B. Reynolds, Palo Alto.
10 Madelung's Deformity. H. F. Adler, San Francisco.
11 *Closure of Abdomen in Face of Sepsis. J. D. Dameron, Stockton.
12 Intratracheal Anesthesia. S. Pope, San Francisco.
13 Vaccination Against Tuberculosis with Von Ruck Vaccine. F. N. Robinson, Monrovia.
14 Treatment of Gonorrhea in Female. J. C. Spencer, San Francisco.
15 Roentgen-Rays and Mesothorium in Gynecologic Practice. H. J. Krentzmann, San Francisco.
16 Persistent Conjunctival Hyperemia After Cataract Extraction and Its Cause. P. de Obarrio, San Francisco.
17 Saturation Point of Serum for Normal Lipoids and Cholesterin. C. Quinan, San Francisco.
18 Case of Systemic Blastomycosis. H. P. Hill and E. C. Dickson, San Francisco.
19 *Case of Fatal Veronal Poisoning. E. Swift, Los Angeles.

8. Error in Blood-Pressure Measurements.—The soft tissues of the arm, according to Kilgore, give rise to little if any error in blood-pressure measurements. The resistance of hypertonic arterial walls has a greater influence, and perhaps at times produces large errors, although calcareous arteries may not

give rise to appreciable error. A cuff at least 12 cm. wide should be used. Palpation and auscultation systolic readings have simplicity and definiteness to recommend them. Experiments are reported which show the amount of variable error in palpation systolic readings for two observers. Similar experiments are cited to show relation between palpation readings and auscultation readings for systolic pressure. For diastolic pressure determinations Kilgore claims the auscultatory method has the advantages of ease and definiteness of reading. Types of manometers are considered. Mercury instruments should not be used for oscillatory readings.

11. **Closure of Abdomen in Face of Sepsis.**—An incision 3 inches above the pubes is made by Dameron through the right rectus muscle, down to the peritoneum. At this step he has wiped the edges with Harrington iodin and liquor formaldehyd in the hope of preventing infection, but as yet nothing has proved a success. He then opens the peritoneum and if there be free pus, uses hot gauze sponges, wrung from a salt solution, just as hot as they can possibly be borne by a gloved hand, and never uses anything but hot sponges, as they seem to stimulate the bowel and promote the ready removal of the pus and exudate. He then starts in search of a clear field, if possible, and begins to wall off the healthy from the infected by long packs of gauze sponges, 6 inches wide by 3 feet long. The exciting cause is found and removed. The small intestines are handled as little as possible, yet if found agglutinated and suspicious of a pus sac, Dameron thoroughly investigates and if pus be present, treats the sac the same as the primary focus. After all suspicious material has been removed, the abdomen thoroughly cleansed and dried, he sews up as if it were a clean wound.

On the third or fourth day the temperature starts up again. He then removes only one of the sutures in the lower angle of the wound and makes steady pressure from above down. If, he says, necrosis is not sufficient as yet, it will be in the next twelve hours. Dameron now removes all primary dressings and applies hot permanganate stupes and keeps them hot, and has the nurse try to express pus after each dressing daily, and if a suspicious hardening under the skin some distance away from original wound is present, make a free incision into it so as to prevent an extension of the phlegmon.

19. **Fatal Veronal Poisoning.**—Swift's patient had taken 100 grains of veronal just prior to retiring for the night. She died nearly forty-eight hours afterward.

Laryngoscope, St. Louis

February, XXIV, No. 2, pp. 81-160

20 Operative Disposal of Chronic Suppuration of Ear. G. Ferreri, Rome.
21 Pathologic Conditions in Ear, Nose or Throat Reflex to Disease of Teeth, Jaws or Parotid Gland. C. E. Ide, Los Angeles.
22 Squamous Epithelioma of Ear and Mastoid. L. J. Goldbach, Baltimore.
23 Tonsillectomy in Upright Position under Ether. W. H. Roberts, Pasadena, Cal.
24 Hypertrophied Tonsils and Adenoids in Schoolchildren. S. J. Baker, New York.
25 Esophagoscopic Radium Screens. C. Jackson, Pittsburgh, Pa.
26 Improved Mouth-Gag. A. S. and L. D. Green, San Francisco.
27 Results from Use of Normal Horse-Serum in Case of Hemorrhage from Ruptured Esophageal Vein. E. Cobb, Marshalltown, Ia.
28 New Modification of Old Adenotome. A. C. Heath, St. Paul, Minn.

Medical Record, New York

March 14, LXXXV, No. 11, pp. 461-506

29 Extension of Tuberculosis in Immune Lung. G. E. Bushnell, Fort Bayard, N. M.
30 Diagnosis and Treatment of Catarrhal Conditions of Eustachian Tubes and Ears. H. Hays, New York.
31 Adenoma of Prostate. E. Beer, New York.
32 Ten Cases of Acute Perforating Gastric and Duodenal Ulcer. V. F. Marshall, Appleton, Wis.
33 Important Factors in Conservation of Hearing. C. M. Harris, Johnstown, Pa.
34 Five Hundred Examinations of Nose and Throat in an Institution for Delinquent Boys. M. Toeplitz, New York.

New York Medical Journal

March 7, XCIX, No. 10, pp. 461-508

35 *Erosion of Tissues by Aneurysms. A. J. Smith, Philadelphia.
36 *Lingual Tuberculosis-Primary. W. B. Trimble, New York.
37 Soap, Water and Opticians. C. H. May, New York.
38 Low Blood-Pressure. E. E. Cornwall, New York.
39 Food Toxemia or American Gout. R. N. Willson, Philadelphia.
40 Serum Diagnosis J. Diner, New York.
41 Heredity in Exophthalmic Goiter. M. I. Moss, Philadelphia.
42 Special Burette for Use in Rideal-Walker Test. H. W. Mahr, New York.

March 14, XCIX, No. 11, pp. 509-560

43 Diverticulitis of Colon. J. F. Erdmann, New York.
44 *Experimental Study of Tubercle Bacilli Submerged in Water. R. C. Rosenberger, Philadelphia.
45 Gastric Flatulence and Disturbances of Heart. H. Stern and L. B. Sachs, New York.
46 Dyspepsia Due to Chronic Appendicitis. J. J. Gilbride, Philadelphia.
47 *Tobacco Smoking and Mental Efficiency. A. D. Bush, Burlington, Vt.
48 Psychological Pitfalls. H. A. Knox, Ellis Island.
49 Quinin and Urea Hydrochlorid in Nose and Throat Surgery. A. J. Herzig, New York.
50 *Medical Contract Practice. S. A. Tannenbaum, New York.

35. **Erosion of Tissues by Aneurysms.**—In connection with the inflammation, which has been insisted on as an essential preliminary and concomitant of erosion, Smith says there appears in the vicinity of the necrosed part requiring removal more or less concentration of leukocytes and occasionally of other cells of phagocytic power, through whose agency the necrotic substance is carried away in particulate form. From the nature of the whole process, the low grade of the inflammation and the gradual occurrence of the necrosis, he states these are not found present in numbers comparable to the leukocytic infiltrations of acute inflammations. Here one often witnesses, however, the participation of the mononuclear leukocytes in phagocytosis, a phenomenon which has often been denied and which does not take place commonly in acute inflammations. Moreover, among cells bearing particles of necrotic substance one may meet, in addition to polynuclear and mononuclear leukocytes, larger mononuclear cells of endothelioid type and doubtless of endothelial origin.

It is through a series of such changes that the whole process goes forward: an inflammation excited by specific organisms or by mechanical results of stretching of the aneurysmal wall, leading to fixation of the wall to the neighboring tissues; erosion of these bordering tissues by atrophy due to pressure by the sclerosis thus induced and to reduction of blood-supply by the establishment of obliterative sclerosis of the vessels, and by degeneration and necrosis induced by such failure of nutrition, with removal of the necrotic substance by phagocytosis or by absorption after liquefaction. With the loss of tissue in this wise there of necessity exists further weakening of the wall of the sac at the corresponding position, and further dilatation of the aneurysm ensues. Thus with the indefinite continuance of these steps the aneurysm progresses through the tissues as they are destroyed, and eventually, coming to some surface or other structure where further adhesion for support is impossible, ruptures through the remaining degenerate tissues which enclose the blood, and death occurs.

36. **Lingual Tuberculosis.**—Summing up objective observations made in two cases, Trimble states that tuberculous ulcers of the tongue have the following diagnostic points: they usually affect the free border near the tip; the dorsum is generally free; they are as a rule superficial; the base is generally a dirty yellow, dotted here and there with minute whitish specks, which probably represent small areas of caseation necrosis; the ulcer may be oval or gyrate, but the borders are generally sharply defined against the healthy tissues, sloping and not undermined; the lesions are not indurated and the neighboring glands are very slightly affected.

The histopathologic examination alone is practically useless as a means of diagnosis between syphilis and tuberculosis, but it is of great aid in excluding cancer. The majority of tuberculous ulcers of the tongue, he says, are, in all likelihood, secondary; it is easy to prove that an ulcer is secondary, but to prove that it is primary is quite another matter.

44. **Experimental Study of Tubercle Bacilli Submerged in Water.**—The enormous number of persons suffering from tuberculous infection, and the countless number of bacilli discharged daily by those patients directly into the sewage systems of the city, or into a stream or tributary of some large

river, led Rosenberger to investigate the vitality (?) and virulence of tubercle bacilli in water mixed with a small quantity of feces and urine.

These studies show that there is danger and very great danger in the careless disposal of the feces of tuberculous individuals. It seems proved beyond any doubt that the tubercle bacillus when discharged into water is not only capable of existing for a very long time, but of retaining its virulence. Therefore, Rosenberger emphasizes the fact that the most important point is insistence on the complete disinfection of the feces of a tuberculous subject, as well as of the sputum and urine, with a powerful germicidal agent. He urges (1) more rigid inspection and examination of dairy cattle for the detection of tuberculosis, and the presence of tubercle bacilli in milk and feces of apparently healthy animals. (2) The water-supply of a village, town or city should be safeguarded principally by (*a*) the prohibition of dumping sludge in streams; (*b*) the proper filtration of water; (*c*) where there are no facilities for filtration, recommending the boiling of water for drinking purposes; (*d*) the rigid inspection of drainage of sanatoriums for the care of tuberculous subjects; (*e*) the prohibition of dumping slaughter-house refuse into streams. (3) Pasteurization of milk for infant-feeding, or the general heating of this food for twenty minutes at 60 C. for the destruction of tubercle bacilli and other toxicogenic bacteria and products. (4) Sludge retained in septic tanks should not be used for fertilizer unless sterilized. Instead of allowing sludge to accumulate for several months before cleaning the tanks, these receptacles should be cleaned at regular stated intervals, say once a month, and the sediment then sterilized; or collected, dried and incinerated. (5) The cremation of those dead from tuberculosis because of the great vitality and resistance of the tubercle bacillus.

47. **Tobacco Smoking and Mental Efficiency.**—A test made by Bush on each of fifteen men, in several different psychic fields, showed that tobacco smoking produces a 10.5 per cent. decrease in mental efficiency. The greatest actual loss was in the field of imagery, 22 per cent. The three greatest losses were in the fields of imagery, perception and association. The greatest loss, in these experiments, occurred with cigarettes. Nicotine was found in the distillates of all tobaccos tested. Nicotine was not found in the smoke of any tobacco, except that of cigarettes, and then only in traces. Pyridine was found in the smoke of all tobaccos tested. Pyridine seemed to be the principal toxic factor in the smoke.

50. **Medical Contract Practice.**—The measures to which Tannenbaum believes we should direct our efforts in combating the evils resulting from cheap contract practice are: publicity, unionization of physicians, correction of abuse of charities, the secret division of fees should be made a misdemeanor punishable by fine and (or) temporary suspension from the practice of medicine. The attending physician should be entitled to extra compensation for engaging in a consultation or cooperating with a surgeon. Consultant's fees should be fixed and easily ascertainable. Physicians of moderate means should consult more with one another instead of calling in the physicians of the plutocracy.

Every physician should be permitted to advertise his specialty on his sign and on his stationery and to publish his card in a newspaper. This would make the specialist independent of commission-seeking confrères. Hospitals, like dispensaries, should be public institutions, and any properly qualified physician should have the right to take a patient into a hospital and treat him there. The health of the community should be the business of the community. Physicians should be public servants just as policemen, firemen, letter-carriers, street-cleaners, judges and schoolteachers are.

Oklahoma State Medical Association Journal, Muskogee

March VI, No. 10, pp. 415-450

51 Treatment of Fractures of Neck of Femur. R. L. Hull, Oklahoma City.
52 Diagnosis and Treatment of Fractures. I. W. Robertson, Dustin.
53 Study of Fifty Cases of Pyosalpinx. W. E. Dicken, Oklahoma City.
54 Orbital Cellulitis. M. K. Thompson, Muskogee.

Southern Medical Journal, Nashville

March, VII, No. 3, pp. 175-254

55 *Milk in Its Relation to Infant Mortality. H. E. Tuley, Louisville, Ky.
56 Importance of Regulated Rest and Play for School Children. J. D. Love, Jacksonville, Fla.
57 Importance of Medical Inspection of Schools. P. F. Barbour, Louisville, Ky.
58 Importance of Pediatrics as Special Study. L. E. La Fetra, New York.
59 Medical Inspection of Children in Rural Schools. W. M. Jones, Greensboro, N. C.
60 Observations on Anxiety Neurosis. S. T. Rucker, Memphis.
61 Commonest Natural Causes of Sudden Death. D. I. Macht, Baltimore.
62 Recent Surgery of Cranial Nerves for Relief of Headaches. H. H. Martin, Savannah, Ga.
63 *Evolution of Treatment of Ectopic Pregnancy. S. McGuire, Richmond, Va.
64 *Osteogenetic Function of Periosteum and Bone Transplants. I. Cohn and G. Mann, New Orleans.
65 *Pulmonary Embolism as Surgical Complication. J. H. Blackburn, Bowling Green, Ky.
66 Local and Venous Anesthesia. G. F. Bicknell, Tampa, Fla.
67 Bacterin Therapy in Diseases of Skin. H. H. Hazen, Washington, D. C.

55, 63. Abstracted in THE JOURNAL, Dec. 20, 1913, pp. 2269 and 2270.

64. **Osteogenetic Function of Periosteum.**—As a result of their experimental work, Cohn and Mann are led to conclude that: (1) Periosteum does not always reproduce bone; in fact, they have never been able to show the existence of an osteogenetic function in the periosteum. (2) Periosteum is not absolutely necessary for bone growth or repair. (3) Small free bone transplants, free of periosteum and individual blood-supply, may grow. (4) The periosteum may be considered as a limiting membrane.

65. **Pulmonary Embolism as Surgical Complication.**—Blackburn is of the opinion that pulmonary embolism secondary to venous thrombosis is a relatively frequent complication in general surgical and puerperal cases, as well as after operations. There is, he says, no specific cause in all cases, but, as a rule, it develops as the result of a combination of trauma and certain blood-changes, either of a chemical nature or from bacterial invasion. Even with the most careful preparation, operative procedures and after-treatment there will doubtless be a certain number of cases of thrombosis with the secondary development of embolism. Blackburn cites six cases.

Surgery, Gynecology and Obstetrics, Chicago

March, XVIII, No. 3, pp. 273-332

68 *Thirteen Years' Experience with Pyloroplasty. J. M. T. Finney and J. Friedenwald, Baltimore.
69 *Epithelial Hyperplasia in Breast. W. C. MacCarty, Rochester, Minn.
70 *Operations for Cancer of Breast. E. S. Judd and W. E. Sistrunk, Rochester, Minn.
71 *Gastric Hemorrhage. J. B. Deaver, Philadelphia.
72 *Etiology and Bacteriology of Leukorrhea. A. H. Curtis, Chicago.
73 *Abscess of Testicle. J. D. Barney, Boston.
74 Congenital Lymphangiectatic Elephantiasis. F. A. Besley, Chicago.
75 *Free Transplantation of Fascia. E. M. Von Eberts and W. H. P. Hill, Montreal.
76 *Summing Up of Goiter Question. C. H. Mayo, Rochester, Minn.
77 Rubber Tube in Reconstruction of Obliterated Bile-Duct. A. T. Mann, Minneapolis.
78 Conservative Surgery of Testicle. G. MacGowan, Los Angeles.
79 *Uses of Fat in Surgery. J. F. Binnie, Kansas City, Mo.
80 *Relation of Ductless Glands to Surgery. R. Park, Buffalo.
81 Spastic Tumor of Pyloric Canal; Other Spastic Conditions of Stomach. W. Lerche, St. Paul, Minn.
82 Simple Apparatus (Rubber Bulb) for Transfusion by Aspiration Injection Method. B. F. McGrath, Rochester, Minn.
83 Technic of Closing Abdominal Incision. H. F. Kane, Washington, D. C.
84 Scalpel Surgery of Tumors of Bladder. G. S. Peterkin, Seattle, Wash.
85 Blocking of Infra-Orbital and Mental Nerves at Their Foramina to Induce Operative Anesthesia in Their Cutaneous Distribution. P. G. Skillern, Jr., Philadelphia.
86 Labor in Cases with Relatively Contracted Pelves. N. M. Garrett, Frankfort, Ky.

68. **Experience with Pyloroplasty.**—From observations of a study of 100 cases of pyloroplasty, Finney and Friedenwald believe they are justified in drawing the following conclusions: The operation has its greatest indication in the relief of pyloric stenosis due to chronic ulcers, situated at or near the pylorus, and on either side of it, or resulting from cicatricial

contraction following the healing of such ulcers. It is often a useful procedure in cases of hemorrhage due to gastric ulcers on the lesser curvature, or to duodenal ulcers which cannot be controlled medically, and which threaten the life of the patient, as well as in the chronic dyspepsias due to ulcers which have not been relieved by medical treatment.

The operation has certain advantages over gastro-enterostomy and but few of its disadvantages. Such objections as are urged against the operation, e. g., its inapplicability in the presence of adhesions surrounding the pylorus, as well as in the presence of active and bleeding ulcers, and also because of the fact that the new opening is not at its lowest point, taking advantage of gravity, are according to their experience more fanciful than real, since the operation has frequently been performed under these conditions with most gratifying results. The interesting experimental work of Cannon and Blake and others supports this contention.

The only contra-indications to the operation are inability to mobilize the duodenum when adhesions are too dense, and thickening and infiltration about the pylorus due to hypertrophic forms of ulceration. These conditions, however, in their experience occur but rarely. In atony or gastroptosis with slight motor insufficiency, such as is observed in the water-trap stomach; or in nervous dyspepsia, i. e., in gastric disturbances not dependent on organic disease, this operation is contra-indicated.

The special advantages of this operative procedure lie in its affording the opportunity to excise all ulcers in the anterior walls of the stomach or duodenum after direct inspection of the part affected; also the application of treatment to ulcers situated in the posterior walls. It does not greatly disturb the normal relation between the stomach and intestines as in the case of other operations. The immediate as well as the final results are most encouraging. While in some instances partial gastrectomy or gastro-enterostomy is undoubtedly the operation of choice, nevertheless, on account of its simplicity and because of its satisfactory end results, the authors believe that pyloroplasty will continue to retain its position as a safe and useful procedure.

69. Abstracted in THE JOURNAL, January 31, p. 404.

70. Abstracted in THE JOURNAL, February 7, p. 485.

71. Abstracted in THE JOURNAL, Nov. 22, 1913, p. 1928.

72. **Bacteriology of Leukorrhea.**—Curtis' views of leukorrhea may be summarized as follows: The uterine cavity tends to remain free from bacteria in cases of leukorrheal infection, but mucus secretion from the cervix may promote the development of purulent discharges. The usual seat of formation of purulent discharges is the lower genital tract. In unmarried women gonorrheal infection precedes the development of chronic leukorrhea in the majority of instances. A chief part played by the gonococcus consists in preparing the soil for other organisms. The great contingent of leukorrheal bacteria consists of anaerobes, of which Gram-negative bacilli form a large proportion. It is highly probable that these bacteria play an active part in the production and maintenance of leukorrhea. Common aerobic organisms, such as *B. coli* and staphylococci, seem to be of minor importance.

73. **Abscess of Testicle.**—The testicle is protected from infection by its tunica albuginea on the one hand, and by its rich blood- and lymph-supply on the other. Arguing from an embryologic viewpoint, the testicle, like the kidney, may be regarded as an excretory organ. As blood-borne organisms reach the epididymis and testicle with equal freedom and frequency, it would appear to Barney that the latter has a selective function, rejecting certain organisms and harboring others. Most of the testicular infections are hematogenous. A few probably are lymphatic in origin. Infection of the testicle resulting in abscess and without epididymal involvement is exceedingly rare.

75. **Free Transplantation of Fascia.**—The work reported on by the authors consisted in the transplantation of a segment of fascia lata from one dog to an artificially prepared defect in either the tendo Achillis, the dura mater, or the peritoneum of the same dog.

Twenty-six operations in all were done, and they are described here in three groups. The authors call attention to the following points: After the field to which the graft is to be transferred has been prepared, a curved incision with convexity forward is made on the postero-external aspect of the lower third of the thigh and the necessary amount of fascia stripped from the underlying muscles. This is then transferred quickly and sutured into position. The raising of the fascial flap should be effected without scoring or other injury to its inner or muscular surface. The muscular surface of the transplant should be turned outward, since under normal conditions this surface glides over the muscles and shows less tendency to form adhesions than does the outer surface — a factor of especial importance in the repair of tendons. After the main operation is completed, the wound in the thigh is closed with skin sutures. No attempt is made to obliterate the fascial defect, partly because in most cases it is impossible to do so, and also because experience has shown that the presence of such a defect is in no way detrimental to the function of the underlying muscles.

Fascial grafts heal without reaction and without appreciable diminution in size, the two requisites being, of course, the avoidance of unnecessary mechanical injury to the tissues and the observance of a strictly aseptic technic. Failure owing to infection is naturally more likely to occur in non-aseptic cases, but even in such cases, in which defects in the intestinal canal, the urinary passages, and the trachea, have been repaired, and in one case of ectopia vesicae in which a large area of the transplanted fascia necessarily remained exposed, prompt healing has occurred.

76, 80. Abstracted in THE JOURNAL, Nov. 29, 1913, p. 2011.

79. **Uses of Fat in Surgery.**—Binnie suggests that after myomectomy the sutured uterine wound may be covered with a plaster consisting of a free flap of omentum held in place by a few stitches. This graft aids in preventing any oozing of blood. The omental grafts placed over intestinal wounds to prevent leakage of intestinal contents are methods of peritonealization and depend for their value entirely on their fibrous tissue constituents and peritoneal covering and not at all on their fat contents; in fact, a very fat omentum, while desirable as a plug for liver wounds, is entirely unsuited to act as a plaster over an intestinal wound.

The same is true for a procedure devised by Binnie where he tied a free flap of omentum around the pylorus to permanently obstruct it after a gastro-enterostomy had been performed. It has appeared to Binnie that where a cavity is left in the brain after removal of a tumor or evacuation of a cyst, if the cavity does not quickly disappear through cerebral expansion possibly a plug of fat might be a suitable tampon. The specific gravity of fat is somewhat less than that of cerebrospinal fluid. Binnie has had only one opportunity to try the method, and that was in a case of internal hydrocephalus following an old and severe trauma where during operation, the ventricle was opened under the impression it was a cyst. Failure was a foregone conclusion.

Many otherwise beautiful faces are deformed by the presence of depressed scars adherent to underlying bone. Sometimes, Binnie says, such scars may be neatly excised with gratifying results, but sometimes such treatment is unsuitable or fails. Subcutaneous division of the adhesion between the skin and the bone may do good, but it does not replace the tissues the loss of which was the cause of the depression. If through a suitable incision the adhesions are thoroughly divided, and if then (after hemostasis is attained by pressure) a suitable mass of fat is gently insinuated through the cut to fill up the depressed area an ideal result may be obtained. It is best to obtain the fat for transplantation from the patient himself (autoplasty), as homoplasty is not quite so successful and heteroplasty commonly fails.

After excising the breast for non-malignant disease it is occasionally of considerable importance to reproduce an esthetic swelling at the site of the mamma. For this purpose fat may be transplanted. When disease has been chiseled out of a bone, recovery is very slow unless the cavity left in the bone is obliterated as by the implantation of non-

pedunculated masses of fat. When a bony ankylosis has been divided and the articular ends of the affected bones have been properly modeled, their reunion may be prevented and a new joint may be obtained by interposing living soft tissues between them. After tenorrhaphy or neurorrhaphy it is very important to prevent the line of union from becoming closely adherent to neighboring structures. There is no better prophylactic measure than wrapping a free or pedunculated flap of fat around the part to be protected. In pulmonary tuberculosis and in bronchiectasis various operations have been devised to put the lung at rest and to cause any pulmonary cavities to collapse. Tuffier has successfully grafted voluminous masses of fat between the mobilized parietal pleura and the ribs in bronchiectasis.

Wisconsin Medical Journal, Milwaukee

February, XII, No. 9, pp. 281-306

87 Clinical Value of Stool Examinations. A. H. Sanford, Rochester, Minn.
88 Ossified Stylo-Hyoid Ligament. W. E. Grove, Milwaukee.
89 Degenerate Girl. C. A. Frost, Chippewa Falls.
90 Ethics in Practice of Medicine. H. P. Bowen, Johnson Creek.
91 Improved Tonsil Snare Tip. R. U. Cairns, River Falls.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

November, XXXVI, No. 2, pp. 119-269

1 Researches on Corpus Callosum. C. T. Van Valkenburg.
2 *Sensory Changes in Friedreich's Disease. P. W. Saunders.
3 *Wassermann Reaction and Its Application to Neuriatry. P. Fildes and J. McIntosh.
4 The Bulbar Nuclei, with Special Reference to Existence of Salivary Center in Man. A. Feiling.

2. **Sensory Changes in Friedreich's Disease.**—The sensory disturbances found in twenty typical cases of Friedreich's disease, in all stages, examined by Saunders were as follows: The appreciation of touch, pain and temperature were very irregularly affected in the upper extremities, never more than very slightly and often not at all. When loss occurred it was almost always a slight distal blunting to touch, and very rarely to pin-prick, or to heat and cold as well. In the lower extremities these cutaneous elements were more frequently involved, and there was often some distal hypo-esthesia to light touch, or even to pressure-touch, and in many cases also to pin-prick and to heat and cold.

It was the other elements of sensation, however, chiefly those that are commonly included in the term "deep sensibility," but also the appreciation of simultaneous contacts, and of size, shape and form, that were most severely affected. The sense of position and the recognition of passive movement, the appreciation of double contacts and of vibration were almost always more or less affected, especially in the distal parts of the lower limbs, and not infrequently, though to a less degree, in the upper limbs, as well. The frequency and the constancy with which these elements of sensation were disturbed was characteristic of the disease.

The recognition of shape and form, and the appreciation of size and weight were also affected, but much less frequently and less seriously than the sense of position, the appreciation of compass-points, or of vibration. This, Saunders believes, was probably due to the fact that these forms of sensibility can be examined in the upper extremities only where the sensory loss as a whole in the early stages of the disease is usually not great, and possibly also to the fact that they are more elaborate forms of sensibility. They would seem, however, to be associated in their disturbance rather with the loss of the sense of position, the appreciation of double contacts and of vibration than with tactile loss. The recognition of shape, and that of size and of weight were affected with the same frequency, and usually in the same patients, while the recognition of form is less often disturbed.

The elements of sensibility, therefore, which it is assumed are conducted through the dorsal columns of the cord, would seem to be disturbed in Friedreich's disease more or less constantly and characteristically. The loss, especially in the early stages of the disease, falls most heavily on the lower extremities, that is, on the regions innervated by the spinal segments that are earliest affected, and tends to spread higher and higher over the body and to become more profound as the disease advances.

In a disease such as Friedreich's ataxy, where there is a very slow progressive degeneration of the dorsal columns of the cord, Saunders points out that it is inevitable that though the sensory loss may conform to a definite type, there must be much variability in the relative intensity of the affection of the different elements of sensibility in different cases. The frequency, however, with which a characteristic sensory loss does occur would seem to justify its inclusion in the clinical picture of the disease as an integral, not as an exceptional, feature; and further, the constancy and regularity with which this loss involves the sensory impulses assigned to the dorsal columns of the cord goes to confirm the conclusions regarding sensory conduction in the cord that have been obtained by the clinical and anatomical study of local spinal lesions.

3. **Wassermann Reaction and Its Application to Neurology.**—This subject is discussed at great length by the authors, who studied 91 cases. The following general conclusions are drawn: In general diagnostic work, exclusive of nervous conditions, a positive reaction is so constant in active syphilis that such a diagnosis, made in the face of a negative result, will require very special support on other grounds before it can be considered probable. A positive reaction in the cerebrospinal fluid indicates a syphilitic lesion of the central nervous system. In active untreated cases of dementia paralytica, tabes dorsalis and cerebrospinal syphilis, the reaction is positive both in the serum and cerebrospinal fluid. In cerebral syphilis, without involvement of the spinal cord, the cerebrospinal fluid is usually negative. Except in the latter cases the strength of the reaction has no certain diagnostic value.

The reaction is apt to be negative in the cerebrospinal fluid in cases of hemiplegia, non-progressive tabes dorsalis and old lesions of the nervous system, especially in cases of stationary congenital syphilis. It is also usually negative in the serum particularly in very recent nerve lesions of the late secondary period, and in the cerebrospinal fluid particularly in treated cerebrospinal cases. The occurrence of a positive reaction in one of the test fluids when the other is negative is so common that a reaction found negative in one fluid only is insufficient to exclude syphilis.

Pure "parasyphilitic" lesions do not respond satisfactorily to treatment as shown by the slight effect on the reaction in the cerebrospinal fluid. Cerebrospinal lesions react very readily to treatment. The celerity with which the reaction in the cerebrospinal fluid responds to treatment is an index of the "parasyphilitic" or "syphilitic" nature of the case. The positive reaction in the serum is rapidly made negative by treatment in acute syphilis, but in chronic syphilis this effect is produced very slowly. In the cerebrospinal fluid, on the other hand, the rate of reduction of the reaction does not depend on the duration of the infection. Thus, in gummatous lesions of the central nervous system, as also in acute secondary cerebrospinal syphilis, the effect of treatment on the reaction in the cerebrospinal fluid is rapid. The "provocative" injection of salvarsan for the purpose of exciting an exacerbation of the reaction has some, but probably an exaggerated, diagnostic value.

Dublin Journal of Medical Science

February, III, No. 506, pp. 81-160

5 Chronic Intestinal Stasis. S. Pringle.
6 Origin of Some of the Hospitals of Dublin. T. P. Kirkpatrick.
7 Admission to Westmoreland Lock Hospital, Dublin, Since the Year 1860. G. P. Meldon.

Indian Medical Gazette, Calcutta

February, XLIX, No. 1, pp. 41-84

8 Gleanings from Calcutta Post-Mortem Records. L. Rogers.
9 Venereal Disease in Army of Indian Empire. P. Hehir.
10 Asino-Vaccine. W. C. Hossack.
11 Use and Abuse of Pessaries. V. B. Green-Armytage.
12 Night-Blindness. P. K. Chitale.
13 How to Keep Flies off Edible Articles for Sale. C. C. Murison.
14 Case of Salvarsan Poisoning. K. G. Pandalai.
15 Case of Transient Hemiplegia. L. Fink.

Journal of State Medicine, London

March, XXVII, No. 3, pp. 129-192

16 Sexual Disease and Individual. A. C. Smith.
17 Mentally Defective Children and Their Treatment. E. Sayer.

Journal of Tropical Medicine and Hygiene, London

February 16, XVII, No. 4, pp. 49-64

18 Culture of Leishmania from Finger Blood of Case of Indian Kala-Azar. C. M. Wenyon.

Lancet, London

February 21, I, No. 4721, pp. 513-586

19 Experimental Principles of Operative Treatment of Fractures and Their Clinical Application. E. W. H. Groves.
20 Thyreoglossal Tract. W. G. Spencer.
21 *Primary Carcinoma of First Part of Duodenum with Secondary Involvement of Common Bile-Duct. J. P. Bibby and M. J. Stewart.
22 *Methods of Increasing Accuracy and Delicacy of Wassermann Reaction. F. H. Thiele and D. Embleton.
23 *Decompression of Brain in Intracranial Hemorrhage. L. B. Rawling.

February 28, I, No. 4722, pp. 587-658

24 Infantilism. H. Gilford.
25 Morbid Anatomy of Tuberculosis in Man. (To be concluded.) T. Shennan.
26 *Comparison of Actions of Chloroform and Ether on Blood-Pressure. H. P. Fairlie.
27 Case of Chronic Joint Lesions in Hemophilia. D. W. C. Jones.
28 Three Cases of Eczematous Dermatitis Produced by Poisonous Plants. A. Whitfield.
29 *Fate of Plug of Iodoform Gauze Accidentally Left in Abdomen. A. E. Maylard.

21. **Primary Carcinoma of Duodenum.**—On laying open the intestine a tumor was found by Bibby and Stewart in the first part of the duodenum, commencing 1½ inches from the pylorus and extending along the gut for a distance of about 2 inches. The growth was 3 inches in length, and almost completely encircled the viscus, leaving only ½ inch of the anterior wall uninvolved. It was ulcerated in the center, while the rest of the surface presented a honeycombed necrotic appearance, save at the extreme margin. The bile papilla and opening of the common duct were situated about an inch below the tumor, and appeared normal. Between the papilla and the lower margin of the growth and immediately abutting on the latter, there was a diverticulum about ¾ inch in depth, and just wide enough to admit the tip of the little finger. The common duct, where it lay in relation to the duodenal tumor, that is, about an inch below the junction of the cystic and hepatic ducts, was itself the seat of an annular new growth completely encircling the lumen, and apparently directly continuous on its deep aspect with the duodenal growth.

Above the tumor there was marked dilatation of all the bile passages, gall-bladder, common duct, cystic and hepatic ducts, but that the obstruction was anatomically incomplete was shown by the ease with which a probe could be passed through the stenosed portion of the tube, and so through the remaining portion of the common duct to the intestine. The dilated bile passages, both intra- and extrahepatic, were filled with a thin, slightly bile-stained, mucoid fluid, while their walls presented a curiously pitted appearance. The liver on section was soft and fatty looking, and showed a considerable degree of bile-staining, especially around the dilated hepatic ducts. There were several secondary deposits of new growth, of which the largest, about the size of a hazel-nut, was necrotic and bile-stained in the center. The pancreas presented no evidence of new growth, but several of the lymph-nodes in relation to it were the seat of secondary deposits.

From the pathologic standpoint the chief problem for solution was, which was the primary growth—that in the duodenum or that in the common duct? After careful consideration the authors came to the conclusion that the duodenal tumor was the primary, and for the following reasons: (1) The gastric symptoms were of three months' standing, whereas the jaundice had only been in existence one month. (2) The type of tumor was very suggestive of a carcinoma of bowel origin. (3) There were secondary deposits in the liver and lymph-nodes, an event which occurs more frequently and earlier in duodenal cancers than in those of common duct origin. (4) The duodenal tumor was more extensive and the seat of more advanced degenerative changes than the common duct growth.

22. **Increasing Accuracy of Wassermann Reaction.**—The author's method of increasing the delicacy of the reaction is: (1) To diminish the amount of complement used to 1½ times, only, that which will cause complete hemolysis of the system adopted. (2) To use large amounts, half a cubic centimeter or more, of inactivated syphilitic serum. (3) To use 50 to 100 units of the antigen. By this method purely anti-complementary phenomena do not play a part. Anticomplementary effects being rendered obvious in the control, true complement fixation, even when minimal, can be readily demonstrated. In this way cases which would otherwise give a slight reaction, so slight as to be doubtful in the ordinary reaction, give a full fixation; cases which otherwise give a negative can be made to give a full reaction, thus bringing in a large number of latent cases; and no fallacious results with other diseases have been obtained.

23. **Decompression of Brain in Intracranial Hemorrhage.**—Lumbar puncture, in Rawling's opinion, is utterly useless for the relief of compression, which is dependent on intracranial injuries, though repeated time after time. In addition there is a positive danger that the sudden escape of cerebrospinal fluid and blood may lead to the medulla being forced down into and "corked up" in the foramen magnum, with immediate disastrous results. Such an accident not infrequently happens when lumbar puncture is carried out for neoplasms of the brain, and Rawling has seen the same disaster occur in traumatic cases. On the other hand, he considers that considerable benefit may be derived from venesection, both in mild cases of compression when carried out alone, and in the more serious cases when utilized in conjunction with decompression operations. The benefits derived are in all probability dependent on the reduction of the intracranial venous pressure and the consequent diminution of the degree of cerebral edema.

Some decompression operation being decided on, what is the best method? There are two chief operations, cerebellar decompression and subtemporal decompression. In comparing the relative advantages and disadvantages of these two methods, Rawling emphasizes that it is necessary to take into consideration the critical condition of the patient, and Rawling thinks that the method chosen should fall into line with the following desirable features: Insomuch as the vital centers are in a most unstable position, more especially the respiratory center, which almost invariably gives out first, the operative position should be one in which there is as little disturbance of respiratory function as is possible. In other words, it is of importance that the patient should be on his back.

The site chosen for the operation should be a convenient one for the surgeon, so that the attack can be carried out deliberately. Hemorrhage should be capable of control during the operation. The sudden loss of any quantity of blood will imperil the action of the vagus and vasomotor centers, both of which are in a position of considerable instability. An area should be chosen where the skull is thin, so that the trephining and enlargement of the gap may be carried out expeditiously and with the least disturbance to the patient. The area attacked should be a "likely" area, one where hemorrhage in relation to the membranes or where brain laceration is likely to be found. The region of brain exposed should be a "silent" area, for the sudden relief of intracranial pressure may lead to such protrusion of the brain that disastrous results will ensue in the event of the motor area or cerebellum being involved. The relief of intracranial pressure should be gradual in character, not sudden and violent.

Taking these factors into consideration with respect to cerebellar decompression, Rawling says it is clear that this particular method is lacking in many essentials. Admittedly, the operation is conducted in close relation to the medullary centers, with proportionate pressure relief, but the relief is too drastic. Again, the position required for the operation is bad for the patient and most inconvenient for the surgeon. Respiratory failure is always to be feared in cerebellar operations, and hemorrhage may be profuse and difficult of

control. Altogether this operation is not commended. On the other hand, subtemporal decompression fulfils all the requirements of a satisfactory decompression.

26. **Comparison of Actions of Chloroform and Ether on Blood-Pressure.**—Fairlie sums up the effects of the two anesthetics on the blood-pressure as follows: (*a*) Chloroform.—A fall of pressure is produced throughout the administration of chloroform. With the establishment of full anesthesia this fall amounts to at least 10 mm. and sometimes considerably more; along with the slower pulse beats, a varying degree of pallor is present. Surgical shock during chloroform anesthesia produces a slight further fall of pressure. With the withdrawal of those two depressants—chloroform and shock—the blood-pressure exhibits a tendency to rises rapidly, and very often soon reaches a point a few millimeters below the patient's normal.

(*b*) Ether.—Little alteration of the blood-pressure is produced by ether. It may cause a rise, it may maintain a constant level, or it may cause a fall. It causes more rapid and more forcible cardiac action, with dilatation of the smaller vessels (as evidenced by the flushing which occurs), the latter probably counteracting the former in maintaining the blood-pressure level almost constant. With intercurrent shock a considerable fall of pressure takes place, a fall almost equal to the combined effects of chloroform and shock. The subsequent recovery after severe shock is slow, some time elapsing before the blood-pressure approaches the normal level.

In all cases of slight surgical shock chloroform causes considerable lowering of the blood-pressure, whereas, in this class of cases, there is but little lowering of the blood-pressure under ether. With the latter anesthetic, therefore, the margin of safety is greater than with the former. In this class ether is the anesthetic of choice.

In cases of severe surgical shock, at the end of an operation the blood-pressure shows more tendency to reaction with chloroform than with ether; there is more decided and better maintained rise with the former. At a time when it is of vital importance that patients should be able to make use of all their resources, they are better able to do so after chloroform anesthesia than after ether.

After weighing up all those considerations Fairlie thinks that, in the second class, chloroform is the anesthetic to be chosen; the induction of anesthesia, however, being effected by means of ether.

28. **Fate of Iodoform Gauze Accidentally Left in Abdomen.**—At operation for stone in the ampulla of Vater a long strip of iodoform gauze was conducted down to the sutured wound in the ampulla and led out of the parietal wound. The wound healed and the patient left the infirmary well. A fortnight later, she began to be troubled with a "soreness in the right side and a feeling of fulness in the stomach." The symptoms which gradually developed were all suggestive of pyloric obstruction, due to adhesions. The abdomen was opened with the object of performing the usual no-loop operation of posterior gastrojejunostomy.

On pulling up the first part of the jejunum for anastomosis with the stomach, the bowel was found greatly increased in size, and its walls greatly thickened and congested. An indefinite feeling of something within the canal was felt. The pyloric aperture was widely dilated, as was also the first part of the duodenum. On opening the jejunum a foreign substance was at once seen which, when withdrawn, proved to be a piece of gauze about 15 inches in length. One part of the elongated mass passed up into the duodenum, while the other extended down the bowel. The upper end presented a large knob-like appearance somewhat whitish in color and practically devoid of smell; the lower was brownish in color and fecal in odor. The patient made a complete recovery and left the institution well.

The piece of iodoform gauze used at the second operation led down to the sutured incision in the ampulla of Vater. During the subsequent dressings of the case the question was once raised regarding the removal of the plug. Neither dressers or nurses had seen it; and as no indication of its presence existed in the wound it was taken for granted that it must have been unknowingly drawn out during one of the removals of the outer dressings to which it had become adherent. Maylard judges that the subsequent fate of the plug must have been that, by pressure, it had ulcerated into the second portion of the duodenum; and once admitted it had gradually been carried on through by the normal peristalsis of the bowel. Although its removal was easy, it had led to impaction and partial obstruction of the canal.

Annales de Médecine et Chirurgie Infantiles, Paris

February 15, XVIII, No. 4, pp. 105-140

30 *Appendicitis in Children. V. Veau.
31 *Acute Nephritis in Children. (Nature bacillaire de certaines néphrites aiguës de l'enfance considérées comme "primitives." Applications de la réaction de l'antigène.) R. Debré and J. Paraf.
32 *Hygiene for the Wet-Nurse. P. Nobécourt.
33 Light Rays and Eruptive Diseases. F. de Courmelles.

30. **Appendicitis in Children.**—Summarized in these columns March 21, page 970.

31. **Acute Nephritis in Children.**—Debré and Paraf report four cases of apparently primary acute nephritis in children 4 to 11, the course, composition of the urine, and all the features testifying to ordinary nephritis, but the deviation of complement test for tuberculosis gave constantly positive findings with the urine from the affected kidney and negative findings with the urine from its sound mate. Inoculation of guinea-pigs also gave positive responses in each case, the animals all developing tuberculosis. There was no deviation of complement by the urine from persons with pulmonary tuberculosis alone, that is, without involvement of the urinary apparatus, in their experience. In the above four cases the response to the deviation of complement test became negative as the nephritis healed or subsided into a torpid, chronic stage. The children all recovered, apparently completely, except that one still has slight albuminuria.

32. **Hygiene for Nursing Women.**—In the course of this class-lecture, Nobécourt emphasized that the best of all means for increasing the flow of milk is the mechanical effect of the child's sucking at the breast. Also that the woman should live according to the strictest rules of hygiene, both general and local, but even then, there may be some special intolerance on the part of the child for breast milk, some inherited taint which interferes with the normal assimilation of even the best breast milk. With congenital intolerance the digestive disturbances generally commence early; Bar has reported the case of a child who became very pale each time after nursing and had at once a dark green, blood-stained passage. This occurred with the mother's milk and with three wet-nurses. The congenital intolerance may be an actual anaphylaxis or an idiosyncrasy or the result of a neuropathic predisposition. The acquired intolerance may be traced to defective diet in the nursing woman; Nobécourt has noticed in the hospital infant wards that the babies all have green diarrhea the day in the week on which cabbage is served to the nursing women. Abuse of chocolate may also affect the infant injuriously; Brandeis found numerous oxaiate crystals in the milk of a woman who took excessive amounts of chocolate. As a rule, however, the defective diet on the part of the nursing woman acts indirectly by inducing constipation or diarrhea.

Archives Internationales de Chirurgie, Ghent

VI, No. 3, pp. 255-366. Last indexed Nov. 8, 1913, p. 1753

34 *The Behavior of the Parathyroid Glands with Ordinary and Exophthalmic Goiter. T. Iversen.
35 Congenital Varices of the Legs; Two Cases. A. Zancani.

34. **The Parathyroid Glands with Disease of the Thyroid.**—Iversen's long article is accompanied by a bibliography of 498 references, filling sixteen pages, and twenty plates showing the thyroid from two or more points of view and the special features of the parathyroids. The article is concluded from the preceding number, and fills a total of 128 pages. It is based on the operative or necropsy findings in 25 cases of goiter and in examination of specimens after an operation in 18 cases. His exophthalmic goiter material includes 3

operative cases, 2 necropsies and 30 specimens examined after removal. The results of this research all testify to the superiority of Kocher's enucleation-resection technic as permitting the removal of the thyroid as needed without injuring the parathyroids, and because it obviates the necessity for ligating the main trunk of the inferior thyroid artery. Iversen's findings also confirm the importance of the parathyroid glands as independent organs with a vital and indispensable function. He found in 96 normal cases that there were only two parathyroids in 2 per cent., three in 9 per cent., four in 81 per cent. and five in 7 per cent. They averaged 2 by 4 by 6 mm. and were located at the rear margin of the lower pole of the thyroid, close to the branches of the artery and the recurrent nerve. With goiter, he found two parathyroids in 4 per cent., three in 36 per cent., four in 56 per cent. and five in 4 per cent. In 4 out of 5 exophthalmic goiter cases there were four parathyroids and in the other only two. He found that the parathyroids had been removed with the goiter in about half of the cases with technics other than Kocher's.

Archives des Maladies de l'Appareil Digestif, Paris

January, VIII, No. 1, pp. 1-60

36 *Megacolon; Six Cases. R. Bensaude and E. Sorrel.
37 Case of "Rectal Aerophagia." Taillens.

36. **Megacolon.**—Bensaude and Sorrel give an illustrated description of six cases, emphasizing that when a loop of intestine is abnormally long it is frequently abnormally large in every direction. The sigmoid flexure is almost invariably involved with megacolon, so that direct inspection of the rectum will generally reveal the cause of the disturbances. They found a kind of valve in the upper part of the rectum in all the cases in which the abnormally large colon caused severe trouble, and they think that this valve formation is comparatively frequent with megacolon; it is formed by a simple kinking of the bowel and straightens out usually after the operation. The various indications for operative treatment are reviewed according as the stagnation of feces occurs in a small or extensive region.

Archives des Maladies du Cœur, etc., Paris

February, VII, No. 2, pp. 81-160

38 Alternating Heart-Beat. (Le coeur alternant.) C. Pezzi and E. Donzelot.
39 The Cardiogram Taken Reclining on Left Side in Valvular Disease. J. J. Manoukhine.
40 Testing the Resisting Power of the Blood Corpuscles. (Les courbes normales de l'hémolyse par les solutions salines hypotoniques.) E. May.
41 Case of Complete and Permanent Arhythmia under Supervision for Thirty-Two Years. J. Heitz.

Bulletin de l'Académie de Médecine, Paris

February 17, LXXVIII, No. 7, pp. 227-270

42 *Poisoning from Custard. (Les empoisonnements par les gâteaux à la crème.) Chantemesse.
43 *Salvarsanized Serum. (L'emploi des injections de sérum salvarsanisé "in vivo" et "in vitro" dans l'arachnoide spinale et cérébrale, dans le tabes et la paralysie générale.) G. Marinesco and J. Minea.
44 Route of Intracranial Infection from Sinusitis. (Des voies suivies par l'infection endocranienne au cours des antrites suppurées de la face.) Sieur.

42. Summarized and discussed editorially, page 939.

43. **Spirocheticidal Action of Serum of Syphilitics Treated with Salvarsan.**—Marinesco and Minea relate experiences along the lines of those recently reported by Swift and Ellis, summarized in THE JOURNAL, Oct. 25, 1913, p. 1572. The communication was reviewed editorially, page 935.

Journal de Médecine de Bordeaux, Paris

February 15, LXXXV, No. 7, pp. 109-122

45 Hygiene of Cities. L. Barthe.
46 *Operative Correction of Undescended Testicle. (L'orchidopexie crurale dans le traitement chirurgical de l'ectopie testiculaire inguinale.) Ayguesparsse.

46. **Undescended Testicle.**—Of the twenty-two patients with undescended testicle treated with Rocher's method, perfect results were obtained in 74 per cent. and fair results in an additional 8 per cent. In the others the spermatic cord was so short that the testicle could never be drawn down to its normal place. Five cases are described in detail. After the testicle has been drawn down into the normal place in the scrotum, it is held there by a suture fastening it to the skin of the thigh for eight or twelve days. Recent reexamination of the patients has shown that the results obtained in this way in three weeks are permanent.

Lyon Médical, Lyons

February 15, XLVI, No. 7, pp. 329-368

47 Reeducation of Speech in Motor Aphasia. J. Froment and O. Monod. Commenced in No. 4.

Presse Médicale, Paris

February 14, XXII, No. 13, pp. 121-132

48 *Intravenous Injection of Concentrated Sugar Solution as Tonic and Disintoxicant. (Des injections intraveineuses de sérum glycosé fortement hypertonique, à 300 pour 1.000.) E. Enriquez.
49 Local Treatment of Asthma. M. Sourdille.

February 18, No. 14, pp. 133-140

50 Roentgenotherapy of Hyperfunctioning Ductless Glands. (Traitement par les rayons X des glandes à sécrétion interne en état d'hyperactivité.) A. Zimmern and Cottenot.
51 Obstetrical Table-Bed. Vassel.

48. **Intravenous Injection of Strong Sugar Solution as Stimulant and Tonic.**—Enriquez' results with a 30 per cent. solution of sugar injected into a vein have been so striking that cable reports of them were published in the papers last month. He has given the injections to fifty patients, some of them receiving up to thirty injections. Glucose is the form of sugar used and he injects very slowly about 250 or 300 c.c. into a vein at the elbow, taking an hour to inject this amount. In some cases he made two or three such injections daily, thus administering up to 300 c.c. of the sugar during the day, representing a total of 1,200 calories. This hypertonic, strongly concentrated solution seemed to be entirely harmless, nothing being apparent at any time which suggested injury of the blood or other damage from the injections. It seems probable that the sugar thus introduced so very slowly becomes transformed at once into glycogen and is transported immediately to the liver, muscles and myocardium where it accomplishes its physiologic task. The proportion of sugar in the blood keeps within normal range and only a minute portion of the sugar passes into the urine, never above 4 or 5 gm. at most, and this only during the first two hours after the injection. It causes an increase in the total amount of blood as fluid is attracted from the tissues by the concentrated solution; the blood-pressure rises and the output of urine increases. This attraction of fluid out of the tissues into the blood is a powerful aid in ridding the system of toxins, bacterial or of other origin, and of poisons, especially accumulated anesthetics. After a general anesthesia, this dehydration of the tissues and consequent flushing out of the system is an important therapeutic measure besides supplying nourishment. It induces what he calls an emergency diuresis when cardiac compensation has been upset, clearing the field for heart tonics to act. It is particularly useful when, on account of kidney trouble, administration of salt is deemed unwise. The indications for the sugar are thus in all conditions of severe infection or intoxication, inanition, defective heart action, etc., in which the clinical gravity of the condition is shown by the decreased output of urine.

Revue de Chirurgie, Paris

February, XXXIV, No. 2, pp. 105-232

52 *Gall-Stones Beyond the Bifurcation of the Hepatic Duct. (La lithiase des branches de bifurcation de l'hépatique.) E. Quénu and P. Mathieu.
53 *Technic for Removal of Parotid Gland. (Conservation des rameaux supérieurs du facial dans l'extirpation totale de la parotide en dehors du cancer.) P. Duval.
54 *Ligation of Vessels and Injection of Formaldehyd in Treatment of Angioma on the Face; Four cases. (Angiomes étendus, diffus ou pulsatiles de la face.) H. Morestin.
55 Wisdom Tooth Disturbances. (Accidents de la dent de sagesse.) F. Moty.
56 Sterilization of Water by Ultraviolet Rays for Surgical Use. M. Brulé.

52. **Gall-Stones in Hepatic Duct.**—Quénu and Mathieu found gall-stones in three cases in the ducts which unite to form the hepatic duct, and were impressed with the way in which

they were embedded in the walls. In one of the cases the entire biliary apparatus was stuffed with concrements; about 160 were taken out and extra provisions were made for drainage which brought away several more. During the two following months there were two slight attacks of jaundice, after which there was no further trouble and the patient has been in good health since to date. They have found four cases on record in which a gall-stone developed in the liver, entailing suppuration as a rule. On the basis of their three cases and of four from Kehr's experience, they sketch the clinical picture of the disturbances which result from development of concrements in the intrahepatic part of the hepatic duct. The patient has usually long had symptoms suggesting gall-stone mischief, and the pain is particularly intense. The jaundice and tenderness have nothing characteristic unless on direct palpation after the abdomen has been opened. By operating promptly on recurrence of symptoms it proved possible to cure the patients completely in the personal cases reported although at first the results of the intervention were far from satisfactory, as it proved impossible to find and remove all the concrements at first.

53. **Removal of the Parotid Gland without Injury of the Upper Branches of the Facial Nerve.**—Duval reports a case of non-malignant tumor in the parotid gland with illustrations of the technic with which he found it possible to save from injury the upper branches of the facial nerve.

54. **Extensive Angioma of the Face.**—Morestin ligates the afferent vessels and injects formaldehyd, and reports extremely satisfactory results in four cases of extensive, diffuse or pulsating angiomas disfiguring women. He ligates both arteries and veins, working through an incision in a fold of skin in the neck, and ligating the external carotid and then each of its branches in turn, especially the superior thyroid, the facial and the lingual. According to the extent of the angioma, the facial vein, the external or internal jugular veins or both should be ligated. After the incision has been sutured he introduces a long needle across the whole diameter of the angioma and ejects five or six drops of the liquid as he withdraws the needle. It is then introduced anew 1 cm. farther along and the procedure is repeated until the entire extent of the angioma has been brought under the influence of the caustic. The angioma swelled afterward but there was little if any pain and it is transient. As the swelling goes down, the angioma is seen as a hard mass which gradually softens up and the destroyed particles seem to be absorbed. The procedure is then repeated on the parts which seem to have escaped the action of the formaldehyd. There was no hemorrhage at any time and the mortified tissues were absorbed or thrown off without complications. There was no special febrile reaction, no sign of embolism or intoxication. The main point is to make the injection carefully to avoid giving cause for development of gangrene. The amount injected seems of less moment. He injected from 7 to 12 c.c. at a sitting of a mixture of one-third 90 per cent. alcohol; one-third glycerin and one-third formaldehyd. Of course general anesthesia is necessary for the ligation of the vessels and the injections, and the method is applicable only for the severer cases of pulsating angiomas and varicose tumors in the face.

Revue de Gynécologie, Paris

January, XXII, No. 1, pp. 1-80

57 *Syndrome from Adrenal Disease in Women. (Diagnostic anatomo-clinique du syndrome génito-surrénal.) A. Gallais.
58 *Tuberculosis of the Uterine Cervix. X. Bender.

57. **Adrenal Disease.**—Gallais refers particularly to tumors in the adrenal glands or simple hyperplasia, stating that in his experience and judging from the literature, they are invariably accompanied by atrophy of the internal genital organs. The typical findings are proliferation of the adrenal cortex plus atrophy of the ovary. The disturbances which result from this combination are of four types: (1) adrenal pseudohermaphrodism; (2) adrenal virilism; (3) the menstrual type, and (4) the obstetric type. In the first form the secondary sexual characters develop early and are of a male type, so that pseudohermaphrodism may be regarded as a sign of simple hypertrophy of the adrenal cortex. When there is an actual tumor in this cortex the male characteristics become exaggerated, with obesity, hypertrichosis and menstrual disturbances. In young girls, puberty comes on early and with male characters; in a boy, the sexual development is premature. In men there is a tendency to premature general weakness, and women become masculine in their muscular strength at first, but then nervous and mental symptoms develop, with irritability and dread. Dysmenorrhea is the principal symptom of the third or menstrual type in women over 20. There is always more or less hypertrichosis or pigmentation, and there may be symptoms of exophthalmic goiter. The obstetric type is like the others except that it manifests itself first with a pregnancy, usually extra-uterine. In one of Gallais' cases the patient died in convulsions and coma, the work of hemorrhage in the adrenal, the seat of an adenoma. He discusses the differentiation of this adrenal-genital syndrome from tabes, meningitis, brain tumors, sexual inversion, periodical psychoses, and other troubles with which it may be confounded. Ovarian extract therapy supplies the lacking internal secretion of the ovary, and is the logical treatment with removal of the cause, the adrenal tumor, when practicable. Wendel has compiled six lumbar operations for an adrenal tumor with four deaths, and seventeen transperitoneal operations with only seven deaths.

58. **Tuberculosis of the Uterine Cervix.**—Bender here reports a second case in which a conservative operation cured the patient completely of a tuberculous process in the uterine cervix. This patient was a woman of 34 with three healthy children. She had long had leukorrhea and, after a miscarriage in 1911, pain in the lumbar region and a sensation of oppression in the pelvis while the discharge became purulent and an ulcerative process developed on the cervix. Amputation of the cervix removed all trouble at once and there has been no recurrence of trouble during the more than two years since.

Archiv für klinische Chirurgie, Berlin

CIII, No. 3, pp. 585-868. Last indexed February 21, p. 652

59 *Localization of Abdominal Tumors by Palpation. (Lokalisation von Abdominaltumoren mit Hülfe der topographischen Gleit- und Tiefenpalpation.) T. Hausmann.
60 *Serodiagnosis of Cancer. (Zur Frühdiagnose des Carcinoms vermittels der Abderhalden'schen Fermentreaktion.) F. Heimann and K. Fritsch.
61 *Tendency to Hernia in the Fetus and Young Children. (Vorkommen von Bruchanlagen bei Föten und jungen Kindern.) P. Bernstein.
62 Injury of the Gluteal Arteries. (Verletzungen und traumatische Aneurysmen der Arteria glutea superior et inferior s. ischiadica.) D. Frischberg.
63 Technic for Side-to-Side Entero-Anastomosis. (Mechanik der Lateralanastomosen im Magen-Darmkanal.) G. Kelling.
64 Giant Growth with Atrophy of Genital Organs. (Fall von Riesenwuchs mit Atrophie der Geschlechtsorgane.) Z. Brind.
65 Research on Regeneration and Transplantation of Bone. (Bedeutung der einzelnen Komponenten des Knochengewebes bei der Regeneration und Transplantation von Knochen.) L. Mayer and E. Wehner.
66 Case of Progressive Ossifying Myositis. E. Ilenkle.
67 *Treatment of Appendicitic Purulent Peritonitis. F. Sasse.
68 Infection of Battle-Field Wounds. (Die Wundinfektion im Kriege.) A. W. Meyer.
69 Metastatic Necrosis of Costal Cartilage. O. Harzbecker.
70 Tuberculosis of the Cecum. (Hypertrophische Blinddarmtuberkulose.) E. A. Delfino.
71 *Pyelography. (Zur Kollargolfüllung des Nierenbeckens.) V. Blum.

59. **Palpation of Abdominal Tumors.**—Hausmann says that young physicians and surgeons are making a great mistake in hurrying the patients into the Roentgen-ray room without taking time to make a thorough local examination by palpation. All methods are liable to fail at times and exact estimation of conditions is usually possible only by combining various methods, and palpation is beyond question the main thing in study of abdominal tumors. With what he calls the sliding and deep palpation (*Gleit- und Tiefenpalpation*) or topographical palpatory diagnosis, it is possible to palpate the normal greater curvature of the stomach in 45 per cent. of those examined; the normal antrum of the pylorus in 25 per cent.; the transverse colon in 60 per cent.; the sigmoid flexure

in 90 per cent.; the cecal portion of the ileum in 85 per cent. and the cecum in 75 per cent. The usual rule that these organs are not accessible to palpation unless they are abnormally hard or enlarged, is shown by this method of palpation to be incorrect; even the appendix can thus be outlined provided it is possible to reach the posterior abdominal wall, for this is the secret, to work down to the rear abdominal wall for the solid background and then feel the organ we are examining as the finger is drawn across it at a right angle to its axis. This transverse sliding of the finger across the bowel or other organ being examined, first working deep in until this organ lies between the palpating finger and the rear abdominal wall enable surprisingly accurate estimation of conditions and show up any tumor growth with nearly all its details. It is important to do the palpating only and exclusively during expiration, stopping as the patient breathes, each time. The localization of the tumor proceeds by exclusion, as a rule, first locating and excluding the stomach, the colon, etc., thus narrowing down the diagnosis.

He gives sketches of the findings with this palpation in twenty-six typical cases, showing the organs that had been excluded from participation in the growth, and comparing the findings with those at the operation or necropsy. Buttersack says of this method that it is as much of an improvement over the old methods of palpation as a modern chronometer is an improvement over a sun-dial. Hausmann reiterates that this method often renders roentgenoscopy superfluous or first interprets the findings of the latter. It renders one independent of the Roentgen apparatus and frequently obviates the necessity for an exploratory laparotomy. One of the greatest advantages of the method is that it easily differentiates a spasmodic contraction of the pylorus from a tumor in the region. In one of the cases of spastic contracture related the radiating pain and the enlargement found at the pylorus were interpreted by the attending physician as a tumor. In spite of Hausmann's protests the abdomen was opened; the stomach was found healthy with no sign of tumor. The appendix was not examined, and afterward as before the pains continued and the appendix region was tender. In another case the greater curvature of the stomach could be palpated above the tumor in the umbilicus region, and the transverse colon below. It proved to be in a lobe of a corset liver studded with nodules. (Hausmann's previous communication on the subject was mentioned in these columns, Dec. 20, 1913, p. 2280.)

60. **Serodiagnosis of Cancer.**—Heimann and Fritsch expatiate on the importance of Abderhalden's dialysis method of serodiagnosis as a means of detecting incipient cancer. It is in this line that it is destined to prove of most use, they think. In a series of thirty-four persons tested, the findings were constantly negative in the seven non-malignant cases and, with three exceptions, constantly positive in the cancer cases. The three cases of advanced cancer in which negative results were obtained show that the method is not infallible but, even allowing this, it is proving a most valuable means of differentiating malignant disease in too early a stage for a clinical diagnosis. In one case a man of 39 had a rebellious ulceration develop in the scar of an old focus of osteomyelitis with fistula. The ulceration kept up for four months but showed no signs of malignancy. The biologic diagnosis by dialysis gave a positive response with cancer tissue, and microscopic examination disclosed cancer cells. In another case, in a man of 66, a tumor starting in the prepuce had every appearance of cancer, yet gave constantly negative responses to cancer tissue from three different sources, and here also the microscope confirmed the negative serodiagnosis, showing in this instance that the tumor was a simple papilloma.

61. **Congenital Predisposition to Hernia.**—Bernstein examined 99 cadavers of fetuses and children under 2 and found a pronounced tendency to hernia in 17, including 12 fetuses, 1 of which was at the fifth month and 2 at the eighth.

67. **Treatment of Diffuse Peritonitis Originating in the Appendix.**—Sasse rolls gauze into a long, loose, narrow strip and works one end of this tampon straight in to wall off the focus and act as a drain. From six to eight or more tampons can thus be worked in from a single small incision on one or both sides. He carries the tampon up to the space just below the diaphragm and below the liver and down into the pelvis, and reports experiences which confirm the advantages of this method of treating severe suppurative peritonitis from appendix mischief. Of his 141 patients with peritonitis thus treated all recovered but fifteen; his mortality was thus 10.6 per cent. The article is illustrated.

71. **Pyelography.**—Blum calls attention to five fatalities in recent months from the procedure of filling the kidney pelvis with a solution of a silver salt for roentgenoscopy — all but one occurred in America — and declares that with the present technic it is taking an unjustifiable risk to apply the method to a normal kidney, and much more to a pathologic kidney. He denounces the measure as fraught with various dangers while we have other equally instructive and far less dangerous procedures for the purpose, namely, roentgenoscopy with a shadow-casting ureter catheter in place; the findings with catheterization of the ureter; measuring the space between the bladder and the pelvis; measuring the residual urine, and applying Völcker's localization technic, and the findings with functional tests of the kidneys which give an accurate picture of the extent of destruction of the kidney parenchyma.

Archiv für Verdauungs-Krankheiten, Berlin

February, XX, No. 1, pp. 1-146

72 *Diarrhea of Thyroid Origin. H. Curschmann.
73 *Comparative Dietetic Study of Cow's Milk and "Milk" Expressed from Nuts. A. Fischer.
74 *Simple Test for Motor Functioning of the Stomach. (Ueber Motilitätsbestimmung des Magens, mit bes. Berücksichtigung der Boasschen Chlorophyllmethode.) H. Kemmerling and B. Wartensleben.
75 *Carmin in Gastro-Intestinal Diagnosis. S. Basch (N. Y.).
76 Hour-Glass Stomach. (Roentgenologisches und Klinisches zur Frage des Sanduhrmagens.) A. Reizenstein and F. Frei.

72. **Diarrhea of Thyroid Origin.**—Curschmann explains why surgeons encounter diarrhea in exophthalmic goiter in nearly 50 per cent. of their cases, as due to the fact that they see only the advanced cases and in these diarrhea is frequent and adds to the gravity of the prognosis. He calls attention to a case reported in detail in which a woman of 43 had severe diarrhea mornings for six months, rebellious to all measures and entailing menacing debility. Except for some enlargement of the thyroid since the age of 16, she had always been healthy. Curschmann suspected thyroid intoxication and obtained a positive response to the Loewi test, that is, mydriasis on instillation of epinephrin in the eye. The blood showed also positive lymphocytosis which Kocher regards as pathognomonic for Basedow's disease. On these findings and on these alone Curschmann resected the thyroid, and at once the diarrhea was cured and the patient promptly recovered, regaining full earning capacity in less than two months. There had been no other signs of exophthalmic goiter at any time. The diarrhea came on always in the morning, directly after waking. In this connection he calls attention to the dissociated reaction of the pupils, the exact reverse of the Argyll Robertson sign, which he has never encountered except in exophthalmic goiter. The epinephrin mydriasis is only one link in the chain of symptoms, but it with other symptoms points to insufficient functioning of the pancreas as a factor superposed on the excessive thyroid functioning. The connection between these glands suggests that pancreas extract might be given a trial in cases of diarrhea of thyroid origin, and may render resection of the thyroid superfluous. In conclusion he warns that a thyroid origin should be suspected in all cases of obstinate "nervous" diarrhea even without any other indications of thyroid disturbance.

73. **Cow's Milk and Vegetable Milk.**—Fischer reports comparative research on the digestibility of the "milk" obtained by expression from almonds and other nuts. It is of course an emulsion, the same as cow's milk, he says, and contains more calories, 90 to 115 in contrast to the 67 in cow's milk per 100 c.c. The vegetable milk coagulates in finer flakes but does not stimulate gastric secretion to the same extent.

74. **Convenient Test for Motor Functioning of the Stomach.**—Boas' chlorophyl test was described in THE JOURNAL, April 13, 1912, p. 1158. This communication from the Düsseldorf hospital reports application of this test in 50 cases. The findings coincided with the Leube and roentgenoscopic findings in 62 per cent. of the cases, showing that the principle of the method is correct. But there are so many sources of error in the technic at present, Kemmerling says, that he does not think the test is ready for general adoption.

Wartensleben writes from Boas' clinic in Berlin to report the further experiences with the test to date, an additional series of fifty-nine patients. The findings coincided with the Leube and roentgenoscopic findings in 78 per cent., and the method is lauded as permitting nearly exact estimation of the functional capacity of the stomach and this in the very simplest manner. There are about twenty methods in vogue, he adds, for testing stomach functioning, but most of them make such demands on the patient that with the usual debility it is impossible to apply them. This objection is obviated with the chlorophyl technic, which is merely the drinking of 400 c.c. of a green-stained water from a green glass. With this there is no stimulating of the stomach mucosa to disturb the findings and the technic is simple and convenient for both patient and physician, while there are comparatively few sources of error. This test clears up many obscure conditions in the stomach and shows when conservative measures are meeting with success and when with failure so that operative treatment is imperative.

75. **Employment of Carmine in Gastro-Intestinal Diagnosis.**—This article was published in THE JOURNAL, Oct. 4, 1913, p. 1295.

Berliner klinische Wochenschrift

February 16, LI, No. 7, pp. 289-336

77 Injury of Cartilage and Bone from Infection in First Period of Growth. (Lokalisation der Bakterien, die Veränderungen des Knochenmarks und der Knochen bei Infektionskrankheiten im ersten Wachstumsalter.) J. Koch.
78 Enlarged Spleen Subsides under Exposure to Radium; Four Cases. (Wirkung von Radium auf Milztumoren.) H. Schüler.
79 Correction of Cleft Palate. (Die "Normierung" des Oberkiefers bei kompletter Kieferspalte.) W. Neumann.
80 Abducent Paralysis and Meningitis Secondary to Acute Otitis Media. R. Lehmann.
81 Trypanosome Diseases in Animals in German East-Africa. H. Braun.
82 Experimental Transmission of Trypanosomes by Flies. (Uebertragungsversuche mit Glossinen.) E. Teichmann.
83 Streptodiplococcus as Cause of Small-Pox. (Ueber den Pockenerreger.) M. Rabinowitsch.
84 Technic for Wassermann Test. (Zur Lehre vom "Wasserfehler.") W. Wechselmann.
85 Technic for Roentgenotherapy. (Tiefenbestrahlung.) F. Davidsohn.
86 Experimental Research to Date on Poliomyelitis. O. Thomsen.

Correspondenz-Blatt für Schweizer Aerzte, Basel

February 14, XLIV, No. 7, pp. 193-224

87 Causes and Treatment of the Anemias. O. Roth.
88 The Morally Defective. (Behandlung der moralisch Schwachsinnigen.) Bleuler.

February 21, No. 8, pp. 225-256

89 *The Mendelian Laws of Heredity in Two Family Strains with Syndactylia. C. Schlatter.
90 Roentgenotherapy in Gynecology. E. Partos.

89. **Inheritance of Webbed Fingers or Toes.**—In one of the two families described there were sixty-one members of the family in the course of four generations and fourteen had pronounced syndactylia. The deformity jumped the second generation and returned in large numbers in the third and fourth, but without, apparently, conforming to the Mendelian laws of heredity. In the other family the deformity was found in nineteen of the thirty-three members of the family in four generations, and here a conformity to Mendel's laws was apparent. The first member known to be thus affected married a man with the same deformity, and all their nine children presented it. All the children of one of the daughters had the deformity and only half of the children of another daughter had it, half being normal. Schlatter remarks that a knowledge of a hereditary tendency to deformity may sometimes help the physician when he is consulted on account of birthmarks, "maternal impressions," etc.

Deutsche medizinische Wochenschrift, Berlin

February 12, XL, No. 7, pp. 313-368

91 *Management of Infants Who Cannot or Will Not Take Nourishment. (Behandlung der bedrohlichen Nahrungsverweigerung und Anorexie der Säuglinge.) L. Tobler.
92 Abderhalden's Serodiagnosis of Pregnancy Not Specific and Not Reliable. (Die Abderhaldensche Schwangerschaftsdiagnose.) L. Michaelis and L. v. Lagermarck.
93 Serodiagnosis of Mental Disease. (Psychosen, Abbau- und Fermentspaltungsvorgänge.) M. Kastan.
94 *Healthy Carriers of Epidemic Poliomyelitis. (Keimträger bei Kinderlähmung.) C. Kling and A. Pettersson.
95 Death from Loss of Hypophysis Functioning. (Hypophysisschwund mit tödlichem Ausgang.) M. Simmonds.
96 Echinococcus Disease of the Brain. (Cysticercus racemosus fossae Sylvii.) O. Rein.
97 Lipomatosis. (Vielgestaltigkeit der Lipomatosis universalis.) E. H. Kisch.
98 *Blocking the Sciatic Nerve. (Regionäre Anästhesierung bei Frakturen der unteren Extremität.) P. Babitzki.
99 *Special Features of Operations on Infants. (Säuglingschirurgie.) H. Stettiner.
100 *Sympathetic Ophthalmia. R. Krailsheimer.
101 From the Balkan Wars. M. Makkas. Commenced in No. 5.

91. **Infants Who Cannot or Will Not Take Nourishment.**—Tobler discusses how to stimulate the appetite of an infant suffering from anorexia and how to feed one when there is some obstacle to its taking nourishment. He reiterates anew the importance of exercise, air and water in stimulating the appetite; an alcohol rub may also aid in this and the sight of another child being fed. With acute inanition, the lack of water may cause severe disturbance, and rectal enemas repeated two or three times a day may help, given slowly and not allowed to run out. For feeding through the nose, a spoon with the tip turned up funnel shape is useful. As a small amount of fluid reaches the rear wall of the pharynx it elicits by reflex action a normal swallowing movement. Young infants can be readily fed in this way without trouble, the child lying on its back with shoulders slightly raised. This method of feeding may proceed more regularly than feeding by the mouth in some cases, with less going astray of the fluid. When more food is to be given or the infant is older, gavage may be tried; it proceeds more smoothly in infants than in adults, and reduces retching to the minimum. He uses a Nelaton catheter No. 13 or 16, lubricating with oil, pushing the tube through the nostril to the rear wall of the pharynx, then utilizing the swallowing act to work it along. It is then cautiously worked farther down into the throat and then rapidly pushed into the stomach. Its arrival in the stomach is generally announced by escape of air. When the voice is loud and the child breathes freely, the catheter can be only in the stomach. He gives an illustration of the technic, and says that its harmlessness can be estimated from the fact that one French physician has reported the case of a child who refused to take nourishment and he had to apply this nasal method of feeding for over two years, feeding it in this way over 2,500 times, tiding the infant along to final sturdy health.

94. **Transmission of Epidemic Poliomyelitis.**—Kling and Pettersson had the nose and throat thoroughly rinsed of healthy persons in the environment of a case of poliomyelitis, thus obtained one or two liters of rinsing water from the family. A monkey was inoculated with some of the fluid and developed the disease although none of the persons from whom the fluid was derived had developed it. As the rinsing fluid from the wife, 12-year-old son and two older daughters had been mixed, it was impossible to tell from which member of the family the infecting germs had been derived; all were healthy at the time and remained so. Similar tests with the rinsing fluid from three other families—a total of four persons—failed to induce positive results.

98. **Blocking the Sciatic Nerve in Treatment of Fracture.**—Babitzki comments on the way in which the apparently most successful reduction of a fractured leg may be shown on roentgenoscopy to be faulty when the patient is put under the influence of an anesthetic, relaxing the muscles. It is not always practicable or safe to administer a general anesthetic, and he states that the desired result can be obtained equally well by restricting the anesthesia to the limb, blocking the sciatic nerve where it passes through the

great sacrosciatic foramen, or the femoral nerve or both. He has applied this technic in sixty-five cases and commends it as simple and effectual and a most important aid in reduction of a fracture in leg or thigh. The needle to inject the anesthetic is introduced under the guidance of the finger in the rectum; with this help it is a simple procedure to find the nerve and block it with the anesthetic, the patient lying prone. The finger in the rectum readily locates the spine of the ischium and slides along the margin of the foramen for 2 or 3 cm. The needle is about 10 cm. long and is pushed in toward the finger by the shortest route. When the finger can feel the needle, the injection is made at once. The anesthesia thus induced lasts from one and a half to two hours and permits examination, reduction, dressing and splinting the fracture without the least pain. In about two-thirds of the sixty-five cases in which he has blocked the nerve in this way for a fracture, the patients were fitted with a walking splint or other appliance made according to Wolkowitsch's principles with most excellent results.

99. **Operations on Infants.**—Stettiner reports from his service at Berlin that necropsy of one infant of four weeks showed pronounced appendicitis. In four cases he tried to remedy atresia ani, but concludes that not much can be hoped from this unless there is a sphincter or one can be made. Further malformations generally accompany the imperforate anus. One child less than a year old died from appendicitis and two from invagination. This experience teaches the necessity for early operative intervention in such cases; the children were practically moribund when brought to the hospital. With severe hypospadias a series of operations may be necessary and he advocates making a preliminary temporary outlet in the perineum for the urine. This renders conditions far more favorable for the operation proper.

100. **Sympathetic Ophthalmia.**—In two of the four cases described, the sympathetically involved eye was enucleated, permitting anatomic study of the changes involved. In one case the sympathetically involved eye was destroyed while the first eye retained some vision. In the third case the sympathetic process involved the deeper parts of the eye while in the fourth only the iris and ciliary body were involved.

Jahrbuch für Kinderheilkunde, Berlin

February, LXXIX, No. 2, pp. 123-260

102 Value in Diagnosis and Prognosis of Repeated Local Tuberculin Reactions. G. Bessau and J. Schwenke.
103 Nature of Hypersensitiveness to Tuberculin. G. Bessau and J. Schwenke.
104 *Acute Non-Specific Pneumonia during the First Few Days of Life. T. E. H. Thaysen.
105 Gallop Rhythm and Extra Systoles in Diphtheric Myocarditis. W. Blacher.
106 Treatment of Rachitis. III. E. Schloss
107 *Effect of Scarlet Fever on the Wassermann Reaction. B. Jakobovics.

104. **Pneumonia in Early Infancy.**—Thaysen divides the pneumonias of the first few days of life into four groups: (1) placental infections, among which are the syphilitic and tuberculous cases and also probably the pneumococcus pneumonias and the rare cases of streptococcus and staphylococcus pneumonia; (2) aspiration pneumonias caused by aspiration of uterus content or of secretion from the normal or pathologic birth canal, also by aspiration of milk or secretion from the mouth; (3) air-borne pneumonias, which are probably very rare in the early days of life; lastly, metastatic pneumonias, which are also rare, from umbilical infection or an intestinal or other lesion. Aspiration pneumonia is by far the most frequent, especially that caused by aspiration of vaginal secretion containing bacteria, from the vagina of a healthy mother.

107. **The Wassermann Reaction in Scarlet Fever.**—Jakobovics examined fifty-five scarlet-fever patients and obtained a positive Wassermann reaction in eighteen. This positive reaction occurs after the subsidence of the acute symptoms and generally only in the severer cases. It usually disappears by the end of the period of desquamation and has no effect on the diagnostic importance of the reaction in syphilis. No conclusions can be drawn from it as to the etiology of scarlet fever.

Medizinische Klinik, Berlin

February 15, X, No. 7, pp. 269-312

108 *Tumors of Central Origin in Bones. (Centrale chirurgische Knochenerkrankungen.) F. Landois.
109 Diagnosis of Functional Capacity of the Kidneys. (Funktionelle Diagnostik der Nierenkrankheiten.) T. Janowski. Commenced No. 6.
110 *Infant-Feeding in the Home. (Anleitung zur Herstellung der wichtigsten Nahrungsmischungen für den Säugling im Privathause.) E. Müller and E. Schloss.
111 *Deafmutism. (Gehör und Stummheit.) E. Fröschels.
112 *Acute Polymyositis. J. Schmautzer.
113 Extraction of Teeth in Prophylaxis. (Die Extraktion von Zähnen im Dienste der Prophylaxe und Therapie bei Stellungsanomalien.) E. Goldmann.
114 *Symptom of Aortic Insufficiency. P. Baj di G.
115 Tests for Urobilinuria with Liver Disease. (Zur Urobilinurie bei primären Lebererkrankungen und Stauungsleber.) T. Hausmann.
116 Influence of the Nervous System on Regulation of Heat and the Metabolism. R. Isenschmid.

108. **Bone Disease of Central Origin.**—Landois discusses osteomyelitis causing cysts, and syphilitic and malignant affections, and propounds a number of problems, especially why certain carcinomas tend to metastasis in the bone marrow. It not infrequently happens that women with mammary cancer have a spontaneous fracture of a long bone and roentgenoscopy reveals the marrow studded with cancer nodules. Similar nodules are liable to develop with carcinoma of the prostate. Other cancers which have metastasis in the bone marrow are the hypernephromas and Grawitz tumors in the kidney, and cancer of the thyroid. The strange fact has been noted that metastasis in the bone from cancer in the thyroid is able to protect the individual against myxedema after removal of the thyroid. This fact, he remarks, teaches that the dreaded cancer cell, the destroyer of our organism, can, under such circumstances, assume the function of an organ.

110. **Infant Feeding.**—Müller and Schloss comment on the great progress that has been realized in infant feeding since the numerous institutions for infant welfare have been founded, permitting the supervision of infants from the first week on. In this way much that is valuable has been learned from experience with healthy and sick babies in regard to different types of infant feeding. They here describe the technic for the production in the private home of five different kinds of artificial food for infants so that a mother with any intelligence can easily make protein milk, malted gruel, etc.

111. **Mutism and the Hearing.**—Fröschels calls attention in this study of deafmutism to the defective respiration which is the result of the lack of speech. He also emphasizes the necessity for training every scrap of hearing which a child may possess, repeating the exercises again and again during the day and with different voices. He also urges the importance of commencing early, even at the age of 2, never letting the fourth year pass without commencing training, especially when the trouble is mutism from psychic deafness.

112. **Acute Polymyositis.**—Schmautzer's patient was a man of 46 who had had acute articular rheumatism five years before but was otherwise healthy. In June, 1912, he had difficulty in swallowing, shown by roentgenoscopy to be due to a spastic contraction 22 cm. below the teeth. This was accepted as a sign of cancer, but it proved to be the first manifestation of acute polymyositis. Drugs had no effect but the contraction was cured by mechanical dilatation so that by November he was nearly free from all trouble. After a month he began to complain of sacral pain and pains in the shoulders and arms, insomnia and depression, with slight fever. The brachial plexus was tender and two weeks later the right upper arm swelled and was tender, but there were no signs of edema. Later the neck and the other arm swelled and other muscles became swollen and tender and obstinate bronchial catarrh developed. The myositis developed in waves, the temperature running up and then the symptoms subsiding with intervals of days or weeks. The lips and lids swelled, and by February, 1913, the disturbances in swallowing returned; the pulse ran up and became irregular and small and the patient died in April with signs of muscular insufficiency. Scraps from the myocardium and tibialis anticus showed small patches of acute inflammatory infiltration. Acute

polymyositis generally terminates fatally; the muscles involved become atrophied at the best. The course ranged from ten days to months or years in the cases on record. No therapeutic measures seem to be of any avail.

114. **Symptom of Aortic Insufficiency.**—Baj di G states that he found the minimal blood-pressure extremely low in his twenty-five cases of aortic insufficiency among a thousand patients in whom he determined the maximal and minimal blood-pressure. The normal standard seems to be between 135 and 150 mm. mercury for the maximal pressure and between 90 and 110 mm. for the minimal. With arteriosclerosis, the minimal pressure is never below 80 or 82 mm., but with aortic insufficiency he found it constantly below 75 and only 60 in the majority. He regards this low minimal pressure as a pathognomonic symptom of insufficiency of the aorta.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

February, XXXIX, No. 2, pp. 147-268

117 *Eclampsia at Königsberg. A. Schiller.
118 Frequency and Obstetric Import of Abnormally Large Children. (Riesenkinder.) J. Lejbowitsch.
119 Delivery after Antefixation of the Uterus. H. Küster.
120 Treatment of Carcinoma of the Genital Organs with Mesothorium. C. Weinbrenner.
121 Relation between Myoma and Carcinoma of the Body of the Uterus. H. Jansen.

117. **Eclampsia.**—This article is based on 360 cases at the Königsberg University Clinic. A historical review is given of the methods that have been used there since 1882. At present, as in the past, the treatment is based on the assumption of the placental origin of the intoxication, and therefore the uterus is emptied as quickly as possible. Vaginal cesarean section is for this the method of choice. The principle followed is that the uterus should be evacuated at the first signs of the eclampsia intoxication. If considerable time has elapsed since the beginning of the eclampsia, operative delivery is dangerous, probably because the body is too much weakened by the toxin to stand it. In such cases conservative treatment is to be preferred, namely, venesection and Stroganoff's prophylactic method with the narcotics limited as much as possible. It is accepted as the general rule that active treatment should not be undertaken if more than six or seven hours have elapsed since the beginning of the attacks.

Münchener medizinische Wochenschrift

February 17, LXI, No. 7, pp. 345-400

122 *Confessions of Imaginary Crime. (Selbstanklagen und pathologische Geständnisse.) K. Heilbronner.
123 Serodiagnosis of Infectious Diseases. (Zur Serodiagnostik von Infektionskrankheiten mit Hilfe des Abderhaldenschen Dialysierverfahrens.) E. Voelkel.
124 Specificity of the Protective Ferments. H. Singer.
125 *Lead Poisoning from Water Pipes. (Bleivergiftungen durch die Wasserleitung.) A. Schwenkenbecher.
126 Typhoid Epidemic at Munich Traced to Milk. Rimpau.
127 Roentgenotherapy of Tuberculosis of Ribs and Sternum. R. Bittrolff.
128 *Determination of Coagulating Property of the Blood. (Blutgerinnungsbestimmung.) L. Fingerhut and H. Wintz.
129 Simplified Technic for Abderhalden's Serodiagnosis. H. De Waele.
130 *Suction Treatment of Peritoneal Adhesions. F. Kroh.
131 Susceptibility to Epinephrin Lost in Dementia Praecox. W. Schmidt.
132 *Fatal Acute Encephalitis Following Salvarsan. T. Kohrs.
133 Hemorrhage in the Pancreas. v. Zezschwitz.
134 Calcium Chlorid for Hay Fever. (Behandlung des Heufiebers durch lange fortgesetzte tägliche Chlorkalziumzufuhr.) R. Emmerich and O. Loew.
135 Ileus. (Diagnose und Behandlung des Darmverschlusses.) W. Danielsen.

122. **Confession of Imaginary Crimes.**—Heilbronner discusses the influence on a weak mind of detective stories and the accounts of murders in the daily papers. They may at times affect the predisposed until they actually believe they have committed the crime or a similar one, or a love of notoriety or other reasons may lead to self-accusation. The rôle of the physician may be peculiarly hard in such cases, and also when a psychosis brings conditions in which the fact of some crime committed years before first comes to light. Circumstances may make it the physician's task here, he says, to prevent the patient from making a confession to the authorities of his old crime. The physician may have to restrain his patient from inflicting injury on himself in this way just as from committing suicide.

125. **Lead Poisoning from Water Pipes.**—Schwenkenbecher found signs of severe lead poisoning in twelve out of twenty-six inhabitants of a building supplied with drinking water through a lead pipe 180 meters long; six others had various symptoms suggesting lead poisoning, and only eight were free from them, and these were all children. Attention was first attracted to the cases by a woman of 38 being brought to the hospital on account of intense abdominal colic and vomiting during two months, followed by increasing paralysis in the arms, intense weakness and headache, in short, the pronounced picture of chronic lead poisoning. It was noticed that the poisoning was most severe in those who drank coffee in the morning, the water having stood in the pipes over night.

128. **Determination of Coagulating Time of the Blood.**—A simple and convenient technic is described with illustrations which seems to avoid the usual drawbacks. To begin with, a needle is used for obtaining the blood which runs into a glass bulb with a minute hole in the top as the needle is held horizontal. The blood can be taken up through this hole in the top without coming in contact with the air or juice from the tissues. In order to keep the blood constantly at body temperature, the capillary containing it is pushed at once into a glass tube which runs through a central tunnel in a glass vessel containing hot water. The tube has over a dozen openings to permit the warm air to circulate around the capillary, and the temperature of the tunnel air chamber is gauged by a right-angled thermometer built in it, the markings outside. The warmed capillary is introduced into the tube, seconds watch in hand, and then, with a wire, the capillary is drawn out for 1 cm. and the etched tip broken off, repeating this every half minute or every two or three seconds, until a thread of fibrin is discovered as the tip is broken off. The first appearance of the thread is the unmistakable sign of the beginning of coagulation.

130. **Prophylaxis of Peritoneal Adhesions.**—Kroh gives illustrations showing the almost incredible way in which the abdominal walls and bowels can be drawn up into a large suction bell. This mobilizes and influences the abdominal contents in a remarkable way, and it is possible to influence the movements of the feces while all the segments of the intestines may be affected as can be seen by roentgenoscopy. In the rabbit this vacuum massage was seen to move the bowel content along in the desired direction without fail.

132. **Acute Encephalitis after Salvarsan.**—Kohrs' patient was a robust man of 26, healthy except for balanitis and a positive Wassermann. On this account he was given mercurial inunctions and an intravenous injection of 0.6 gm. salvarsan. There were no symptoms for two days after the injection, but then acute encephalitis followed, fatal in five days. Kohrs tabulates with this eleven other similar fatalities on record to call attention to the fact that comparatively large doses had been injected in all, only one having 0.4 gm.; the others had 0.6 gm. and those with a second injection a total of 0.9 up to 1.2 gm. in less than forty days.

Wiener klinische Wochenschrift, Vienna

January 22, XXVII, No. 4, pp. 69-92

136 Two-Route Method of Treating Lupus, etc. (Ueber medikamentös kombinierte Radiumtherapie.) M. Schramek.
137 Experimental Research on Cholagogs. (Beeinflussung der Gallenwege durch Pharmaka.) F. Reach.

Zentralblatt für Chirurgie, Leipsic

February 21, XLI, No. 8, pp. 321-368

138 Diagnosis of Spinal Disease. (Wirbelsäulenerkrankungen.) A. Schanz.

Zentralblatt für Gynäkologie, Leipsic

February 21, XXXVIII, No. 8, pp. 297-328

139 Prolapse of the Rectum. (Eine neue Operationsmethode des Invaginationsprolapses des Mastdarmes der Frau.) A. Sippel.
140 *Menge's Method of Treating Postoperative Hernia. L. Prochownick.
141 Relapse after Vaginofixation. (Zwei Fälle von Abreissung der vaginifixierten Gebärmutter von der Anheftungsstelle.) J. Voigt.

140. **Extensive Postoperative Hernias.**—Prochownik describes in detail Menge's technic for remedying conditions of this kind, and lauds it as superior to others for the purpose. It has been successfully applied for multiple hernias in a number of cases, and this is the touchstone of the method. Conditions were very unfavorable for any operation in four of Menge's nineteen postoperative hernias thus treated and in three of Prochownik's fourteen. The principle of the method is to work through a long transverse incision, possibly making several smaller transverse incisions, and separate the rectus muscles completely from their fascia above and below and for a long distance up and down. The muscles are then drawn over the site of the hernia to form a solid barrier. On account of the transverse incision, the conditions which result prevent recurrence of the hernia much more effectually than with any other method. The great drawback is the tediousness of the operation; it can scarcely ever be done in less than an hour and a half, he says, and often takes up to two and a half. For this reason it is better to work with local, spinal and sacral anesthesia than by inhalation anesthesia, although a little chloroform or ether may be needed toward the end. By this means the danger from retching and coughing is avoided.

Gazzetta degli Ospedali e delle Cliniche, Milan

XXXV, Nos. 19-21, pp. 193-224

142 Diagnostic Importance of the Diazo Reaction and Permanganate Test. F. Marcantoni.
143 Syphilitic Fever in Third Stage. G. Capello.
144 Weakness of Muscles on Paralyzed Side May Be Only Sign of Organic Nature of Hemiplegia. L. Gatti.

Policlinico, Rome

February 15, XXI, No. 7, pp. 225-260

145 Local Anesthetics in Surgical Practice. D. Pellegrino.

February 22, No. 8, pp. 261-296

146 Herpes in the Throat. (Di una rarissima forma di glotto-epiglottite, "Herpes supra laryngeus.") V. Grazzi.
147 Nearly a Quart of Gasoline Drunk without Serious Consequences. O. Bonazzi.
148 Poisoning from Sardines. (Le intossicazioni alimentari da pesci conservati-Tonno e sardine sott'olio-.) M. Pergola.

February, XXI, Medical Section No. 2, pp. 49-96

149 Influence of Muscular Fatigue on the Functioning of the Autonomic Nervous System in Health and with Exophthalmic Goiter. E. Tedeschi.
150 *Cancer Metastasis in the Brain. C. Silvan.

150. **Metastatic Cancer in the Brain.**—Silvan found 21 cases of this kind at 14,000 necropsies in which the brain was examined, that is, in 0.15 per cent.; they formed 17 per cent. of the intracranial tumors encountered. Only 8 were in men; the age was generally between 40 and 60, but one was in of woman of 22 with a sarcoma in the femur; another was in a woman of 33 with mammary cancer. The primary tumor was in the breast in 6, in the stomach in 3, in the thyroid in 2 and once each in the lung, pleura, parotid and penis. In the majority of cases there was metastasis elsewhere. The left hemisphere was the one generally involved, especially the cortex of the frontal or parietal lobes. The clinical course is compared with the findings in a number of the more typical cases.

Hospitalstidende, Copenhagen

February 11, LVII, No. 6, pp. 161-192

151 *Influence of Endogenous Factors on the Type of Progressive Paralysis. (Endogene Momenters Betydning for den progressive Paralyses kliniske Udtryk.) G. Neve.
152 *Cancer in Undescended Testicle. (Carcinoma testis abdominalis.) G. Espersen.

February 18, No. 7, pp. 193-224

153 Korsakoff's Psychosis from Brain Tumor. (Et Tilfælde af Tumor cerebri med ualmindelige psykiske Symptomer.) F. Friedenreich.

151. **Influence of Endogenous Factors on the Type of Progressive Paralysis.**—Neve has found twenty-seven cases on record in which patients developing progressive paralysis had had some psychosis in previous years. He has encountered four cases of the kind, and is inclined to regard the paresis in such cases as a concomitant affection, superposed on the old mental disease rather than that the paresis was of a special manic-depressive type. He thinks that dementia is the main feature in progressive paralysis, and that any other type of mental derangement is not due to the paresis itself, although the latter may arouse an otherwise latent predisposition.

152. **Cancer in Undescended Testicle.**—Espersen has found records in the literature of twenty-nine cases of this kind to which he adds one of his own. His patient was a man of 22 released from military service on account of left inguinal hernia, never requiring a truss. He had three attacks of appendicitis in the last year, but was otherwise apparently healthy until he began to feel weak and experience pain in the right iliac fossa. He lost 17 pounds in weight in the course of three or four months. The scrotum was empty and a tumor could be felt in the iliac fossa. The enlarged testicle was removed and proved to be transformed throughout into carcinoma tissue. In the 19 cases compiled by Blanck, the correct diagnosis had been made only 6 times; in some cases the operation had been done for supposed appendicitis. Among the 29 cases, 11 of the men were between 20 and 30; 11 between 30 and 40 and 5 between 40 and 50. The microscope showed a round-celled sarcoma in 12 cases and a carcinoma in four. Complete recovery is known only in 2 cases nearly three years after the operation; one was a mixed tumor, the other a sarcoma, both quite large. All the 4 carcinoma patients died. The later fate of a number of patients is not known. Neve thinks that the operation should be along the lines of those for mammary cancer, and that prophylactic Roentgen exposures afterward may be useful.

Hygiea, Stockholm

February, LXXVI, No. 3, pp. 131-191

154 *Diverticulitis and Sigmoiditis. R. Dahl.

154. **Diverticulitis and Sigmoiditis.**—Dahl reports a case in detail and discusses the history of these affections and the complications which they may entail. He says that diverticuli are usually multiple; up to 400 were encountered in one case. They are more common in men, and after the age of 40. The youngest case on record was in a child of 7. Their development is favored by corpulence, by much loss of flesh after being corpulent, by meteorism, by great fluctuations in the blood-supply, and by congenitally weak muscles. The complications may present various pictures according as the lesion induces inflammation around, with or without perforation and peritonitis, adhesion with neighboring organs, the bladder or genital organs, with torsion of the intestine or fistula. Cancerous degeneration has been reported in 8 cases on record (Hochenegg and Mayo).

Ugeskrift for Læger, Copenhagen

February 12, LXXVI, No. 7, pp. 269-314

155 *Necropsy with Heart-Block. (Tilfælde af Adams-Stokes Syndrom med Sektionsfund.) O. V. C. E. Petersen and H. C. Hall.
156 *Hour-Glass Stomach. (Om Timeglasventrikel i Anledning af en Række opererede Tilfælde.) A. Pers.

155. **Necropsy with Heart-Block.**—In the case of Adams-Stokes syndrome reported, a large calcium concrement was found compressing the bundle of His. The patient was a man of 55, who had had acute rheumatism as a young man, but there had been no signs of heart trouble until thirty years later.

156. **Hour-Glass Stomach.**—Pers analyzes 18 cases; a tumor could be felt at the cardia in 4 and the lesion was adherent to the abdominal wall in 2. In 8 of the total cases there was a crater-shape ulcer; in 3, shallow ulceration. Residue was found after an abnormally long interval in only 8 of the patients; this absence of retention was responsible for the delay of the proper diagnosis in some of the cases. All the patients were supposed to be cured, but recent reexamination showed that trouble had returned in 5 of the 13 patients given palliative treatment for an ulcer in the lesser curvature. The results were a little better with gastro-gastro-anastomosis than with gastro-enterostomy. He is inclined to advocate resection as the better and safer procedure, while the danger with it is scarcely more than from the palliative methods. The details of his 18 cases are tabulated for comparison, the ultimate outcome showing up better on the whole after resection.